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MONTHLY REPORT

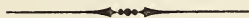
OF THE

DEPARTMENT OF AGRICULTURE

FOR

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MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE, STATISTICAL DIVISION,
April 28, 1871.

SIR: I present herewith, for publication, a summary of reports on the condition of winter grains, on the condition of farm animals, and on diseases of farm animals. Also a variety of extracts from the correspondence of the Department, and articles upon subjects as follows: Representation of Husbandry; Cinchona-planting in Jamaica; Cost and Profit of the Department of Agriculture; Agriculture and Climate of Oregon; Imports of 1870; Market Prices of Farm Products; Prices of Middling Cotton for twenty years; English Short-horn Cattle Sales; Agriculture in Portugal; Agricultural Statistics of Great Britain; English Imports of Breadstuffs; British Revenue; Scientific Notes; Meteorology; together with a number of items from various sources.

J. R. DODGE, *Statistician.*

Hon. HORACE CAPRON,
Commissioner.

CONDITION OF WINTER GRAIN.

The autumn season was generally favorable for germination and vigorous growth; the winter has been comparatively mild and uniform in temperature; the freezing weather mainly occurred in mid-winter, and found the wheat plants protected by a sufficient covering of snow; the spring has been unusually early, and the growth of grain advanced two to four weeks beyond its accustomed status. There is no State in which winter-killing is not exceptional, and in several it is almost entirely unknown. It may be that future reports, as the season progresses, will be less favorable; they certainly cannot be more flattering. In the following digest of the returns almost every unfavorable statement is presented.

New England.—In Maine there has been considerable loss from winter-killing, especially in the counties of Oxford, Piscataquis, and Cumberland, during the variable weather of February and March. Winter-grain looks well in York, and rye is in fine condition in Androscoggin.

The open winter and light covering of snow has left wheat and rye in unpromising condition in Hillsboro, Strafford, and Belknap, in New Hampshire; while Merrimack reports a prospect above the average, and the fields look well in Sullivan. There is little grown in Coos.

Vermont grains have suffered somewhat from open winter. The appearance presented in Windsor County is 40 per cent. below an average upon heavy soils, but very fair upon warm lands late sown.

Reports are quite favorable from Massachusetts and Connecticut,

except from Middlesex, in the latter State. No wheat is grown in Rhode Island, and, indeed, very little in New England.

The Middle States.—But three counties in New York, Onondaga, Schuylcr, and Washington, report more winter-killing than last year. The warm autumn gave a strong growth in Western New York, and though the covering of snow was light the plants retained their vigor through the winter, and are in more than medium condition. The counties reporting "very good," are Tioga, Westchester, Seneca, Steuben, and Columbia, while Jefferson estimates her area "20 per cent. better than last spring." Three-fourths of the returns indicate merely an average prospect. In Chautauqua the crop is promising, what there is left of it after the autumn's work of the Hessian fly. In Onondaga the plant was small in the highlands in the autumn, and weak and unthrifty in the spring, but looks well in the richest and best-tilled fields.

Of fifteen counties reporting in New Jersey, none present discouraging accounts, but three limit the prospect to an average, two estimate an advantage of ten per cent., three of 20 per cent., and one of 25, while others return the crop "better than for years;" "looking remarkably well;" and in Burlington one correspondent makes it "the strongest and thickest stand he has ever seen."

Forty counties in Pennsylvania send returns, of which only those from Tioga and Union represent an inferior prospect, and fully three-fourths report a more than average luxuriance. It is stated of Cumberland that "there are no poor fields and wheat could not look better;" it is "remarkably fine" in Indiana, "though the fly has destroyed parts of fields;" "the fields of Lehigh present a finer appearance than for thirty years," due in part to the fine weather and absence of cold winds in March; wheat in Beaver is "quite promising, especially the drilled fields, and those injured by the fly have recuperated and may yield well." It is stated in the latter returns that a few fields, on which straw and long manure were spread, were completely destroyed by the mice, which were so abundant that pastures were injured by them.

Wheat and rye look well in Delaware. Every return from Maryland is favorable in comparison with last year. The crop is generally more advanced than usual, and in Washington County it "never before, within the recollection of the oldest inhabitants, had so promising a look."

Of thirty-six returns in Virginia, three (Montgomery, Northumberland, and Dinwiddie) are less favorable than usual; seventeen show great improvement, and the remainder report a medium appearance.

North Carolina makes forty-two favorable returns, while those from Chatham and Haywood declare winter grain "more backward than usual," though in the latter, rye is fine. York, Lexington, and Orangeburg, in South Carolina, do not represent their crops as promising, but the other counties make a favorable report.

Wheat was winter-killed in Morgan County, and is poor in Bartow, Newton, and Pike, but looks well in thirty-six counties reported, and very finely in twelve.

In Lee, Alabama, wheat is very inferior; elsewhere it is generally good, though in some sections the early sown looks much better than the late, which is small, but of good color and a good stand.

A very small area of wheat or rye is sown in Mississippi or Louisiana, except in the latter for winter pasture. Wheat presents a uniformly promising appearance.

The counties in Texas in which the appearance of wheat is poor, are McLennan, Red River, Medina, (greatly injured by drought,) and Ban-

dera; many counties report little sown; the prospect is good in Fayette, Lampasas, Falls, Bexar, Bell, and Anderson, and very promising in Dallas, Fannin, Gillespie, Lamar, Travis, Collin, Grayson, Atascosa, and Kerr.

Winter grain is unpromising in Johnson, Arkansas; "late and backward" in Columbia; better than our correspondent ever saw it in Newton; 50 per cent. better than last year in Benton, and is doing well in three counties.

Wheat was greatly injured by the cold in Davidson, Tennessee, but all other returns are favorable. The season, according to the Giles correspondent, is a month earlier than last year.

Twenty-six counties in West Virginia send reports, all of a promising tenor, several representing winter crops "better than for several years."

Thirty-six counties of Kentucky make favorable returns, and in two, Butler and Christian, wheat has suffered from an open winter. It is two to four weeks earlier than usual.

Full returns from Missouri, fifty-six counties being represented, are unanimous (with the single exception of Clay, in which protracted rains have been injurious) in presenting a very promising appearance of winter grain, and much the larger portion represent the prospect as very flattering. In Shelby, "better than for thirty-five years;" in La Fayette, "better than for fifteen years;" in St. Louis, "better than ever known here;" in Mann, "never better in the history of the State."

Not a county in Illinois reports a poor appearance of winter wheat or rye. It is said of the area in St. Clair that while very promising apparently, "some of it looks yellow, perhaps the result of overcropping and exhaustion of the soil, or perhaps the fly;" in Randolph it is claimed to be 25 per cent. better than at the same date within thirty years;" in Monroe and in Williamson it "has not looked better in thirty years;" in Putnam a similar comparison is made for a period of twenty years; "never appeared better" in Cass, in Knox, or in Madison; "has afforded pasture all winter," in Jersey; "one month earlier than last year," in Clinton; in fact, scarcely a county presents a moderate statement. All circumstances have favored the crop. The fall was characterized by warm rains, the winter brought no freezing till January, when the ground was covered with snow, and since the snow went off only the surface has been slightly frozen. The Cook County correspondent reports no wheat sown in the following crisp terms; "We have long since ceased to speculate in winter wheat and rye, as it is easily shown that every dollar we ever made in winter grain cost us sixteen shillings." The report from Pope is as follows: "Winter wheat looks better than I have ever seen it at this season. There has been no frost to keep the wheat back, since early in February, and the ground has been wet all the time. Wheat is too rank in the top, and I fear there is not root deep enough to sustain the stalk and enable the head to fill with good plump grain, during the dry weather which we usually have before harvest. Rye is in the same condition, looks very well, and I believe will not suffer from a drought in filling as much as will wheat."

Of fifty-two counties reporting in Indiana, none represent winter grain in poor condition, and but five indicate a mere "average" prospect, while more than a third state that the appearance of such crops was never excelled at the same season. In one-fourth of the number represented no rye was sown.

There is some complaint of the ravages of the Hessian fly, in Hancock and Lucas, Ohio, and in Lake County the promise is not as good as usual; in twenty-six counties a condition above an average is reported,

in seven the winter grain looks better than for several years, and in fourteen it "never looked better." Twelve counties do not report rye.

Very general returns from Michigan represent winter grains in superior condition, eleven only giving an average promise, and none lower than average.

In Wisconsin there was some injury in the more northern counties from freezing, six reporting low condition, but the larger number represent the crop as better than usual. But twenty-six counties report winter wheat.

Very little winter grain is grown in Minnesota. Five counties report wheat looking well, and two make unfavorable returns. In a large number winter rye is grown, and is generally looking well.

Less than a tenth of the wheat of Iowa is the winter variety. Only sixteen counties report it, all favorably.

In Kansas the returns from thirty-one counties represent the range of condition of winter grain from "good" to "the finest known," and "an immense yield is expected."

Nebraska is a spring-wheat region, but the winter variety "looks well, what there is of it."

The reports from California are more variable. In Alameda "wheat and other grains do not promise an abundant crop;" in Stanislaus it is "50 per cent. worse than usual, owing to cold, dry weather;" in San Joaquin it was represented that crops would be an almost total failure unless spring rains were enjoyed; an average condition is reported in Santa Clara and Tuolumne; an improvement upon last year is indicated in Napa and San Bernardino; and in Lake and Mendocino all winter crops are in excellent condition.

Accounts are favorable from Oregon, except in Josephine County. Where winter crops are grown in Nevada and the Territories, they are reported in good condition almost without exception.

CONDITION OF FARM ANIMALS.

A little foresight, directing the way to judicious management, will often remedy the deficiencies of production. Thus the comparatively short crop of hay of last season, which was seriously light in the East and in portions of the West, led to the husbanding of immense quantities of corn-fodder, and to the utilizing of masses of straw for feeding purposes, so that the animals of the farm, consigned by the timid and the croaking to semi-starvation or the knife, have come forth from their winter quarters in higher flesh and better health than for several years past. It is true that, in sections in which scarcity was most apparent, beesves were sent to the shambles in larger numbers and lighter condition than usual; but the relief came mainly from care in feeding, avoidance of waste, and the use of coarse feeding material, so abundant at all times, and generally so little utilized. Some credit should be given, however, to providential mildness of the winter, which reduced the consumption of fodder, and in some northern latitudes permitted an unaccustomed bite of grass. The past season has furnished new evidences of the capacity of this country as a meat-producer, and the extent of its feeding resources ordinarily wasted; especially has it illustrated the surpassing value of our corn crop.

The returns relative to condition of farm animals bear a remarkable

uniformity in their exemption from croaking and depressing views; and while they exhibit great variety in description of the status of domestic animals, nine-tenths of them indicate a state of health and vigor varying from medium to highest; and care has been taken, in the following digest, to present all the unfavorable statements made.

CONDITION OF CATTLE.

In ten counties in Maine cattle are reported in "average" or "good" condition; in Somerset they "came to the barn poor last fall; hay was scarce, and they are therefore thin in flesh."

In all counties reporting in New Hampshire, condition ranges from "fair," "good," "better than common," up to "remarkably fine" in Hillsboro County, where hay was of fine quality, and in consequence of a short crop more grain and attention than usual were bestowed.

Cattle have wintered unusually well in Vermont, no unfavorable report being received. The report from Grand Isle is, "the best I ever knew." The correspondent in Orleans County reports as follows:

Twenty or more years ago cattle were fed very poorly in this region. I have seen cattle driven to the woods in winter to eat the twigs of birch, hemlock, and other trees felled for them to browse upon. I have seen cows so poor that it was necessary to help them up; and it was no disgrace to have two or three that had to be thus aided by lifting at the tail. Now most of the cattle in this county are wintered in stables made so snug that the temperature is raised by animal heat several degrees above freezing, even when the thermometer is at zero or lower. The hay is also of fine quality, and cut earlier than formerly. More grain is fed and less straw; and now it is quite common to have cattle gain in flesh through the winter, and dairy cows are strong and vigorous, and come in in March or April, and are capable of giving a good flow of rich milk. Several herds in the county yielded over two hundred pounds of butter to each cow last year.

The reports from Massachusetts are, "good," "very good," and "never better." Similar statements are made from Rhode Island and Connecticut, except in Fairfield, in the latter State, and Providence, in the former, where cattle are not in as high condition as usual, though healthier.

In New York the counties reporting "good condition" are Broome, Ulster, Oneida, Clinton, Greene, Cattaraugus, Steuben, Suffolk, Schenectady, Fulton, Saratoga, Wyoming, Rockland, Albany, Chenango, Ontario, Jefferson, Onondaga, Franklin, Columbia, Allegany, Dutchess, Seneca, Washington, and Warren; "above an average," Madison, Otsego, Schuyler. Our correspondent in Warren writes that hay has been high and scarce, but has been freely used, to the great benefit of the stock. He estimates as follows the value of a condimental feed of grain occasionally:

I calculate a bushel of oats, 80 cents, helps a horse as much as a hundred of hay, which costs a dollar; and a bushel of corn ground in the ear, at \$1 25, is equal to two hundred of hay.

The mild weather of the past winter has been extremely favorable to the health and growth of cattle in New Jersey, Ocean County presenting the only report of inferior condition. Delaware makes an equally favorable return.

Pennsylvania reports as follows: "Not so good as usual, owing to scarcity" of feed last fall, in Wyoming County; "good condition when properly cared for," in Beaver; "excellent," with some exceptions, in Berks; "poor," not having recovered from effects of drought last fall, in Susquehanna; "good" in Bradford, Somerset, Washington, Perry, Clinton, Adams, Warren, Montgomery, Union, Juniata, Greene, Chester; "average," Elk, Westmorland; "better than average," Cambria, Franklin, Cumberland, (better than for many years,) Dauphin, Delaware,

Lawrence, Lebanon, Tioga, Fulton, Erie, Clearfield, Crawford, Fayette; "very good" in Cambria, York, Armstrong, Sullivan; and in Butler "remarkably good, the late fall pasture, with abundance of corn and fodder, compensating for inferior quality of hay."

In Baltimore County, Maryland, "cattle are looking thin;" "where proper treatment has been bestowed they wintered well" in Howard; in other counties the reports are all favorable, some of them in a marked degree.

In Virginia, cattle are represented in poor condition in Princess Anne, Northumberland, Stafford, Scott, and in the part of Nelson injured by the flood in the James; about as usual in York, "always poor;" and from "fair" to "fine" in thirty-one other counties reported.

The only counties reporting unfavorably in North Carolina are Sampson, Union, Bladen, and Orange, while forty-one return "better than usual," "in average condition," "remarkably good," or equivalent terms.

South Carolina presents an equally favorable report, except in Martin and Newberry.

Fifty-four counties of Georgia send returns. In McDuffie "a worse condition than for ten years" is reported; "poor" in Baldwin, Terrill, Mason, Heard, and Decatur; "better than for ten years" in Colquitt; "better than at any time since 1860" in Walton; "in unusually fine condition" in Richmond; "in excellent condition" in Towns, Jackson, Schley, Bristow, Clinch, Charlton, Chattanooga, Fulton; and in the remaining thirty-seven counties a condition up to or above an average. Throughout Florida the reports are favorable without exception.

In Butler, Alabama, the record is "poor," but as good as usual in the spring; "poor" in Marengo; as good as usual in Lawrence, Dallas, Tallapoosa, Greene, Lee, Marshall, Clarke, Etowah, Morgan; better than usual in Jefferson and Randolph; very good in DeKalb, Montgomery, Calhoun, and Clay.

In Newton, Mississippi, "some that have been on the range all winter are now fat enough for beef;" in Wilkinson, Winston, Clark, and Carroll, they are poorer than last spring; all other counties report "average," "better than usual," or "very good."

In Louisiana, cattle wintering in canebrakes come out fat. The winter has been favorable, and stock are generally in comparatively fine order. Only one parish, Washington, presents an unfavorable report.

The returns from Texas are quite variable. In Dallas County the winter has been severe on the unfed and unprotected stock, and one-fifth have died; in Uvalde unusually poor; 20 per cent. below average in Bandera; poor in Leon, Milam, Smith, Red River; very poor in Forsythe, Galveston, Washington, and Burleson; poorer than for several years in Refugio, where many have died; in Williamson thinner than usual, but fattening fast; in Kendall, "those that took to the hills and distant grazing grounds are in fine condition, while those in the home ranches are thin;" in Bell, "cattle four years old or upward are in good condition, but old cows and young stock are poor;" in Wharton they have "come out of the bottoms sleek and fat;" in Nueces, the grass starting early, cattle recuperated rapidly, and are selling at \$20 to \$21 each, to fill up immense droves starting for Kansas; in Rusk, Harris, Lampasas, McLennan, Gillespie, and Gonzales, an average is reported; in Lamar, Bee, Lavaca, Bexar, Maverick, Atascosa, Hays, De Witt, Victoria, Austin, Anderson, Fannin, good condition; and in Collin, Hardin, Titus, Travis, fat enough for beef; Matagorda, Falls, Burnet, "very good;" in Blanco "50 per cent. above an average."

Newton County, in Arkansas, makes unfavorable returns of protracted cold weather and weak and feeble cattle; Columbia reports a wet spring and thin stock; Arkansas, early grass and steady improvement in condition; while Mouroe, Sebastian, Benton, Clark, Cross, Johnson, Pulaski, and Prairie represent farm animals in fair condition; and Washington, Van Buren, Montgomery, Independence, and Jackson in fine order.

Twenty-four counties in Tennessee report favorably, without exception, in various degrees of thrift, as a result, in part, of a mild winter, though reference is made in Sumner County to "better provision in the way of shelter."

Of twenty-seven counties reporting in West Virginia, only two make unfavorable returns—Wayne, "for want of attention," and Brooke, "for want of roots"—the others representing the condition of stock as "fair," "very good," "better than for years," and "never better."

Reports from thirty-three counties of Kentucky include but one account of poor cattle, (from Gallatin,) owing to the destruction of grass by drought last autumn, while two-thirds of them describe farm-stock as in high condition for the season of the year.

In Missouri, cattle are reported poor in Franklin, Phelps, Vernon, and Washington, from scarcity of food or want of protection; and in average or excellent health and flesh in other counties. Plenty of feed and mild weather are assigned as causes of this favorable state of things.

In Illinois only one county, Marshall, reports cattle in poor condition, as a result of last season's drought and short forage crops; "average," Bureau, Boone, Lawrence, White, Winnebago; "good," Macon, Mercer, Pulaski, Williamson, Logan, Livingston, Stephenson, Menard, Henderson, Sangamon, Washington; "very good," Grundy, Cumberland, De Kalb, (better sheltered than usual,) Jersey, Pike, Stark, Warren, Scott, (never better,) Champaign, (50 per cent. better than common,) Clinton, Effingham, McDonough, Pope, Putnam, Tazewell, Cook, Hancock, Massac, McHenry, Peoria, Randolph, Schuyler, Morgan, Alexander, Cass, Ford, Kankakee. In Winnebago "the finest winter and March in twenty-five years" is reported, and the following statement is made by the Boone correspondent:

Cattle have come out of winter quarters in full average condition, owing to the following causes: 1st. Good pasture last fall. 2d. Weather open till 15th December, giving time to feed standing corn-stalks. 3d. Moderate, even winter. 4th. The unusual amount of corn-stalks cut up and housed for winter use. Probably more stalks were saved last fall than during the entire preceding time since the county was settled, (since 1836.) 5th. Farmers, fearing a scarcity of feed, sold an unusual amount of stock in the fall, so the remainder fared better. 6th. The excellent quality of the hay, though the quantity was very limited indeed, not being more than 33 per cent. of an average, many farmers cutting none at all. 7th. Straw fed instead of being burned. Probably one-half of all straw is burned in the field. This year it has been fed, thus adding to the manure heap. 8th. An economical use of all fodder.

Of fifty-two counties reporting in Indiana, eleven represent the condition of farm stock as good, fifteen as excellent, one as "best in twelve years," one as "best in twenty years," three as "never better," fifteen others as above an average, four "average," and two below an average.

In Vinton County, Ohio, cattle are "looking poorer than for years before;" in Montgomery they appear in "not quite average" condition; in Hancock, thinner than usual in consequence of drought; Hamilton, Madison, Auglaize, Butler, Fairfield, Greene, Ross, Wayne, Warren, Carroll, Holmes, Brown, report "good condition;" while those reporting "fine," "excellent," "unusually good," and equivalent terms, are Noble,

Shelby, Williams, Athens, Tuscarawas, Perry, Clark, (never better,) Erie, Fayette, (better than for ten years,) Henry, Highland, Jackson, Jefferson, Morgan, Morrow, Seneca, Columbiana, Geauga, Lucas, Mahoning, Crawford, Putnam, Richland, Franklin, Stark, Hardin, Marion, Summit. "Fine," Mercer, Lake, Medina, Miami, Darke, Hocking, Union, Wyandot, Champaign, Licking, Logan, and Lorain. Fifty-six counties make specific returns on this point.

Twenty-six counties in Michigan make returns concerning the condition of farm animals, of which eighteen are marked "good," as follows: St. Joseph, Genesee, Van Buren, Tuscola, Alpena, Lapeer, Gratiot, Kalamazoo, Jackson, Berrien, Sanilac, Hillsdale, Montcalm, Monroe, Oakland, Shiawassee, Antrim, Emmett. Cass, Barry, Lenawee, and Washtenaw, report "excellent," and the return from Calhoun is, "strong and healthy."

In Wisconsin twenty-three counties report cattle in good condition, and fourteen returns are still more favorable. No unfavorable returns have been received. In Iowa County, "the winter just closed has been the best for stock of all kinds for many years, being very mild and dry, with a very little snow, requiring less feed this winter than for a long time. They have been able to browse in the woods and prairie."

Of twenty-five counties in Minnesota reporting, but two present evidence of poor condition, ten use the descriptive term "good," and thirteen use adjectives of higher import.

One county in Iowa, Jefferson, returns cattle "thin," owing to a short crop of hay, while fifty-four make favorable returns, fourteen representing the condition as "good," the others characterizing the status of cattle by the words "excellent," "splendid," "never better," "fat enough for beef," (Decatur,) and "better than for many years."

Thirty-three counties in Kansas show a condition almost identical with that of Iowa, all presenting favorable returns, the only modifying statements relating to isolated cases of neglected animals. "Fat and fine" is the return from Crawford; and in Shawnee and Coffey cattle have wintered better than for many years. Washington, Montgomery, Osage, Ottawa, Linn, Jackson, Franklin, Miami, and Nemaha are among those presenting the strongest statements.

Nebraska, fifteen counties reporting, makes returns equally favorable.

California returns are of variable import. In Tuolumne, cattle are in "poor condition, owing to poor pasturage;" in San Joaquin, "poor, because of little rain, unusually cold weather, and poor grass;" in Stanislaus, the loss has been five to ten per cent., owing to severe weather; in Alameda, poorer than usual, from lateness of the spring; in Lake, poor, from cold and open winter; in Napa, five per cent. below average; in Los Angeles and Santa Clara, "fine;" in San Bernardino, "very fair, considering drought last year, and scarcity of winter rain;" and in Mendocino "better than at any former period since the settlement of the county."

In Oregon, returns are generally favorable, yet Douglas reports the condition of stock as the worst in nine years.

The returns from the Territories are remarkably favorable, as far as received.

CONDITION OF SHEEP.

Sheep have come from the barn in New England in comparatively good condition. A few exceptions may be noted: Hancock County, Maine, many ewes losing their lambs; Rockingham, New Hampshire;

Dukes, Massachusetts. Frequent mention is made of the fact that farmers find care and feed to pay them better than neglect.

The only reports of bad condition in New York come from Chautauqua, Seneca, and Franklin; in Pennsylvania, from Washington. All other sections of the Middle States report fair or superior condition.

Accounts from Maryland are uniformly favorable, and from thirty-two counties in Virginia a like unanimity is only lost by a slight depreciation in Albemarle. All but three of the forty-four reports from North Carolina illustrate the good condition of sheep, which ranges from "fair" to "fine;" the exceptions are from Union, Stokes, and Person. All returns from South Carolina are favorable. Of fifty counties of Georgia reporting, only Morgan, Clayton, and Baldwin return bad condition; and the same favorable state of things exists through the South, the only exceptions being in Marengo and Etowah, in Alabama; Yazoo, in Mississippi; Dallas, (from severe exposure,) Burleson, (very poor,) Galveston, Kendall, in Texas; Newton, Arkansas, (feeble for want of care.)

Our extensive correspondence in the Western States includes only the following counties in which sheep are not at least in average condition: Wayne, in West Virginia, (from lack of attention;) McCracken, (from want of proper protection,) Butler (poor but healthy,) in Kentucky; Iron, Putnam, Phelps, (from cold storms,) and Henry, Missouri; Bureau and Marshall, in Illinois; Wayne, Marion, (not many alive, owing to disease,) in Iowa; Atchison, in Kansas; La Fayette and Outagamie, in Wisconsin; and Ramsey, in Minnesota. Ohio, Indiana, and Michigan make no return of sheep in inferior condition, and a majority of the reports are very favorable.

In Lake County, California, "many lambs and ewes died from backwardness of grass;" "losses from insufficient feed" are reported in Alameda; in Stanislaus, the severity of the winter has wrought injury; in Tuolumne, sheep are poor, owing to lack of pasture; in Napa, inferior in condition.

The only unfavorable return from Oregon is from Douglas County. The Territories present their flocks in fine condition almost without exception.

DISEASES OF FARM ANIMALS.

It has been necessary, on each recurring annual investigation relative to farm stock, to chronicle an amount of animal suffering, disease and death, disagreeable in the recital, burdensome as a tax upon industry, and much of it unnecessary as it is expensive. Neglect and exposure, habitual and almost universal in the barnless sections of the country, and too common in the more recent settlements of the colder Northwest, have cost the farmers of the country millions annually. The past winter has been mild, and more humane and economic views are beginning to obtain; and the record of the present spring is therefore greatly improved. A large preponderance of the returns concur in this view, and many of them bring cheering evidence of more rational practices in the treatment of domestic animals. Even where hay was scarce, as in Grand Isle County, Vermont, "extra care and attention more than offset the reduced quantity of fodder." It is gratifying to notice as one of the reasons for less mortality in the Northwest, "the more general erection of warm shelters," as in Fillmore County, Minnesota. While cattle "do well," as is frequently reported, without any shelter prepared

by the hand of man, even in the Rocky Mountain valleys, there is no certainty of such exemption from suffering and death, either in the Territories, in Texas, or in Louisiana. In the latter, an almost tropical region, the return for Washington Parish says: "The severity of the winter caused considerable disease in stock, and the survivors, depending on the woods, barely lived, as a general thing."

Losses of the past year.—The actual mortality from exposure and disease was probably not half as great in 1870 as in 1869. A majority of the counties return a very favorable comparison with the report of last spring; some estimate one-half as much loss, others one-fourth, and several correspondents assert that they have heard of no losses whatever. This is the case in no less than eight counties in Indiana. In Hillsborough, New Hampshire, there has been "less than for five years." The correspondent in Frankin, Pennsylvania, says he "never heard of so little."

A few counties report an increase of mortality; among them, McDuffie, in Georgia; Fayette, (50 per cent. greater from cold rains and scanty pasturage,) Bell, (less in sheep, more in cattle,) Milam, (50 per cent. lost from destruction of grass and drowning,) Galveston, and Leon, in Texas; Benton, Arkansas; Upsbur, West Virginia; Marshall, (25 per cent. greater than last year,) Illinois; Barry, (owing to smutty corn,) Michigan; Meeker, Minnesota; Lake, California, (three times as great;) Alameda, (scarcity of food,) Stanislaus, (severity of the winter,) Tuolumne, San Joaquin, in the same State.

DISEASES OF CATTLE.

Splenic fever.—The "Texas cattle disease" has had few opportunities to display its malignity since the isolation and winter pasturage of droves in Western Kansas. It has been found unprofitable and impracticable to introduce them by boats via New Orleans and the Mississippi River, and the trade has quietly accommodated itself to what was a necessity and at the same time a convenience and economy to itself.

A few facts illustrate the capabilities for mischief of the splenic infection, and show how easily havoc might be spread again among the herds of the West. The following statement is from—

Lincoln County, Kentucky. There was a car-load of cattle brought here from Memphis, Tennessee, about the 1st of July, and after being here a few days seven of them died. The cattle in the pasture were taken out and nothing more was heard of the disease until the middle of October, when it again broke out among the native cattle that had been pastured on the same grass, and some sixteen others died, and it again entirely ceased about Christmas. It was supposed that the cattle were partly Texas cattle, and that the disease was Texas fever.

The report from Madison County, Illinois, asserts that a drove of Texas cattle lost about ten head by what was supposed to be Spanish fever. The disease extended to native cattle and to hogs, which are supposed to have eaten of the carcasses of the Texas beeves. This statement is at variance with common experience as to the effects of the diseased meat upon swine. It is not sufficiently explicit.

The correspondent in Floyd County, Indiana, says: "No Spanish fever has prevailed. Notwithstanding all that has been said on the subject, our people believe that the disease was brought here by Texas cattle; for it prevailed terribly year before last, when hundreds of southern cattle grazed in the county. This year we have not had a case."

In Uvalde County, Texas, a loss of 12 per cent. from "Spanish fever" is returned. It is stated that cattle became much diseased in 1863, and

"observation proved the disease to be contagious," and that change of range tends to restoration to health.

In Clark County, Arkansas, several cattle were lost by being pastured in a field where a drove of Texas cattle had been. No disease was noticed in the drove.

The report from Independence County, while showing exemption from splenic fever during the past year, refers to the fearful ravages in 1868, by which the native cattle were nearly exterminated. Laws prohibiting the passage of Texas cattle have since kept the disease from the county.

A few cases occurred in Butler, Crawford, Montgomery, and Neosho, in Kansas, and a larger number in Johnson.

In Linn, Missouri, ninety-five died from feeding on the track of a drove of Texas cattle. In St. Louis a few cases occurred where Texas cattle had been pastured. A drover in Cole County, who supplied the State penitentiary with beef, drove some Texas cattle from the railroad depot to his pastures a few miles from town. On the way some of the town cattle became mixed with the drove and were driven rapidly to the pasture, where they were separated and set free from the Texas herd. A few days after this occurrence those town cows commenced showing symptoms of Texas fever, and twelve head of them died. The disease was not communicated from these natives to others grazing with them. The drover in question promptly paid the losses without litigation. Another case occurred among the herd of Dr. McWorkman. It was introduced on his place by some Texas steers bought by him for fattening, and caused severe loss. Fifty cases, all fatal, originated from Texan cattle herded and pastured in Pettis County last August. Our correspondent in Vernon makes the following statement:

Two droves inoculated the native cattle. They came into the county in June. One was owned by a citizen, and remained about five weeks; the other was driven through by strangers. Both claimed that their cattle were wintered in the State, but did not show proof of the fact. The drove first mentioned was herded near Nevada, the county seat. As soon as the fever broke out among the native cattle they were shipped, yet the fever continued to spread, through the neighborhood in which they were herded, until frost, killing 225 head, valued at \$9,000, being at or about 80 per cent. of those exposed. The second drove, in attempting to pass through, were stopped near Montevallo, a town eighteen miles east of Nevada, for a day and part of a night. In about four weeks the fever appeared. The loss here was 230 head, mostly oxen and milch cows, valued at \$11,700. Ninety-two per cent. of the cattle exposed died. The excessive drought made the fever more fatal than usual, few or none recovering. The following facts in relation to this fever are well known here; we have been familiar with the fever for seventeen years:

First symptom, several days before any other appearance of sickness, is a dry cough, particularly when not feeding.

Second. More flies collect on them; at this time the breath will have lost its sweetness.

Third. Ears slightly droop; eyes look dull.

Fourth. Nose dry; appetite poor; languor; cough ceases.

Fifth. Fever commences; ears hang; appetite gone; reel in walking in hind parts; do not follow the herd.

Sixth. Eyes sink; a feverish, slaughter-house smell; generally on feet, but seldom move.

Seventh. Hair appears dead, as on a dry hide; death with few struggles.

Some pass bloody water; feces of brown color, but plentiful. In others no change from health can be discovered, excepting the brown color of the feces; while others are costive. In these the feces are very dark, small, and dry.

In Putnam, Illinois, eighteen steers (three years old) died within three days in a pasture which had been occupied by Texas cattle the previous winter. In Bureau County, into which a considerable number of Texas cattle were driven last summer, 125 to 150 fatal cases are reported.

Our correspondent for Jasper County, Iowa, reports a loss of 3 per cent. of their cattle from "Spanish fever."

In the stock yards of Lake County, Ohio, into which southern and western cattle are brought, deaths have occurred, but it is not certain that they were caused by splenic fever.

In Fauquier, Virginia, the disease followed the introduction of Texas cattle, and large numbers of native cattle died.

The same result followed a like course in Knox County, Tennessee; and the fever is reported also in Surry and Burke, North Carolina, and in a few counties in Northern Georgia.

Foot and mouth disease.—Epizootic aptha, brought from Massachusetts, exists in three herds, in a town of Rockingham County. Great care has been exercised, by the use of dry lime on the stall floors, and an application of carbolic acid, to prevent its spread. No fatal cases have occurred. The disease was carried to various points in Massachusetts, from Brighton Market. Prompt and thorough measures were employed in stamping it out, with general success. No fatal cases are reported.

In Rhode Island it has been of a very mild type, yielding readily to remedies. It has been very prevalent, but has now disappeared.

Animals from Albany or Brighton, infected with the virus of epizootic aptha, were brought into Litchfield, Middlesex, Hartford, Fairfield, and other counties in Connecticut, but they were usually isolated very promptly, and effectually treated. There has been no mention of deaths from this disease.

In Westchester County, New York, several cases are reported among cows and oxen, but no deaths. It has been quite prevalent in Dutchess, 1,500 cases being reported, though there were none at the date of the report. None were fatal, yet the milk of course was unfit for use, during the eight or ten days of its continuance.

Abortion is reported in Windsor County, Vermont; in Essex and Worcester, Massachusetts; in Otsego and Chenango, (in some herds 10 to 15 cases,) in New York; in Burlington, New Jersey; in Berks and Beaver, Pennsylvania. It is little known in the West and South. The reports of the present year indicate a decrease of losses from this cause in prominent dairy districts.

Disease from smut in corn.—A considerable loss has been attributed to smut in corn in several of the Western States. In some instances the exciting cause is assumed to be the eating of large quantities of corn-stalks, without a sufficient supply of water. A herd of 102 steers, all in apparent health, were taken from a poor pasture and put in a fresh stalk field, in Marshall County, Illinois, and fourteen were found dead the next morning, and five more on the following morning. In Dane County, Wisconsin, a number of deaths occurred after the cattle were turned into the stalk fields. In Kansas, losses were heavy from this cause; 200 died in Coffey County, and some in Shawnee and Osage. The report from Jackson, Iowa, attributes losses to the corn-stalks, "causing engorgement of the paunch, and laceration, inflammation, and death;" and similar loss appears in Black Hawk, Bremer, Harrison, Lee, Chickasaw, and Delaware; in the latter, "*post mortem* examination discloses in the folds of the stomach a dark substance, similar to smut, which it is believed to be." In Hillsdale and Barry, Michigan, in Holt, Missouri, and in Houston, Minnesota, similar effects of eating stalks are reported. In Roanoke, Virginia, one-eighth of the young cattle have died, "supposed to be caused by grazing in wheat fields."

Pleuro-pneumonia, which has been so fatal in the vicinity of Baltimore and the District of Columbia, and to some extent in the neighborhood of Philadelphia, has been less prevalent during the past season.

Black leg.—This disease occasions the death of many young cattle, each spring, in every section of the country, generally attacking those in good condition, and ending in death. It is not reported in New England; in New York a few cases are mentioned in Ontario and Chautauqua; in Albemarle and Highland, Virginia; in Harrison, West Virginia; in Mercer, Ohio, 20 fatal cases; a few deaths in Noble, Ohio; several fatal cases in Winona and McLeod, Minnesota; losses in Chickasaw, Plymouth, and Jackson, the report from the latter stating that the disease usually begins on a foot or leg, and spreads quite rapidly over the affected member, and sometimes over the whole body, autopsy showing the tissues beneath the skin congested and really black; considerable loss among young cattle in Nemaha, Pawnee, and Washington, Nebraska; and many fatal cases in Coffey, Howard, Riley, and Shawnee, Kansas.

Charbon.—This virulent disease has nearly disappeared from the South. The report from St. Mary's Parish, Louisiana, says: Malignant pustule, or *charbon*, carried off twelve mules on one plantation. It did not spread.

Murrain.—It is to be regretted that a more accurate knowledge of cattle diseases does not exist among the farmers of the country. The use of the words "murrain," "dry murrain," "bloody murrain," and distemper, is common in the reports, and other meaningless terms are applied to diseases having a great diversity of symptoms. We shall refer to them together, giving whatever of intelligent characterizations may be found in the returns. The following statement, which presents some of the symptoms of splenic fever, is from

De Kalb County, Georgia.—A disease called murrain, or distemper, prevails now every year, and nine-tenths of the cattle attacked die; they refuse all food, ears droop, have very high fever, stand all the time, but refuse to move, bowels costive, sometimes urinate blood. Death generally ensues about the fourth day. After death the manifold, or the contents, are dry and hard, almost as hard as if baked in an oven. Small loss the past year—5 per cent.

In Humphreys, Tennessee, a disease has prevailed which is not understood by the farmers. "Cattle when first attacked look sleepy, eyes run and are red, and an eruption of the skin, like nettle rash, appears, which drives them frantic. The number lost is 75 head."

In a small area on Tye River, Nelson County, Virginia, a very fatal disease has prevailed. In Burke County, North Carolina, a disease like Spanish fever has taken off one-fifth of the number of milch cows in some localities, and "distemper" is reported in Caldwell, Person, Randolph, Rutherford, Surry, Wilkes, and Yadkin.

In Webster County, West Virginia, some unknown disease invariably terminates fatally an hour or so after the attack. Symptoms: Loss of appetite and uneasiness manifested by the animal walking about, shaking of the head, lying down and rising frequently.

In Georgia "bloody murrain" is reported in Murry and Walker, "murrain" in Lumpkin, "distemper" in White, and an "unknown disease" in Coweta and Towns.

"Bloody murrain" has prevailed in Hardeman, Tennessee; "dry murrain killed a few" in Meigs, and an "unknown disease" has been very fatal in Humphreys.

A disease terminating fatally in three days, in its features resembling "scours" or "dry murrain," has caused some loss in Clarke, Missouri.

In Tuscola, Michigan, "a few cases of dry murrain" are reported.

In Weeks County, Minnesota, some animals have died from a nameless disease, which causes a swelling and subsequent soreness of the throat.

Black tongue.—In Sampson County, North Carolina, a dozen deaths have occurred from “black tongue;” and 5 per cent. of the cows and yearlings of Utah County, Utah, have died from the same disease.

In Washington County, Illinois, “there is a kind of itch, in some respects similar to scab in sheep; the animals afflicted seem as healthy as others. As soon as warm weather begins the cattle commence rubbing, in some cases rubbing the hair entirely off the head and neck. It may be nothing but lice.”

A report from Schuyler County, Illinois, notes the loss of nearly seven hundred cows from a kind of sore mouth, the tongue swelling so that the animal is unable to masticate or swallow food.

In Pulaski a few cattle have died of a strange disease. “In some instances dark venous blood has been voided in the later stages, and after death the alimentary canal is filled with the same dark blood to the exclusion of all fecal matter. In some cases the animal continued to feed without giving indication of disease until within twenty-four hours of death. No evidence of contagion.”

Milk sickness is reported from Lorain, Ohio, and “milk fever” from Erie. In Amite County, Mississippi, cattle have been much troubled with lice, which infest them in immense numbers, seriously affecting their health.

The buffalo gnat, which sometimes causes the destruction of cattle in the Southwest, has been very injurious in portions of Arkansas, causing the death of 5 per cent. of the cattle in Arkansas County already, “with six weeks yet for the pest to run if the weather is wet, and three weeks if dry.” It has not appeared at that locality before for years, and has been a worse infliction than ever before.

Among all the diseases named, perhaps *starvation*, with its various aliases, as “general debility,” “hollow horn,” “horn ail,” or “hollow belly,” is productive of greater loss than any other. Neglect, exposure, insufficient or irregular feeding, and no feeding whatever, are prolific causes of weakness, disease, prostration, and death. In Piscataquis County, Maine, a few cases of “horn ail” are reported; also in Holmes, Ohio, in Stafford, Virginia, and in Clark, Mississippi.

Our correspondent in Nueces, Texas, estimates that not less than twenty thousand head of cattle have perished by drought.

It is gratifying, however, to state that the losses from exposure and neglect are far less than in former years. That there is practiced a more sensible economy, if not a higher humanity than formerly, is evident from the repeated mention of improvement in the treatment of farm animals. The correspondent in Windsor County, Vermont, testifies upon this point that “since farmers have generally furnished good protection for their stock the various diseases that formerly prevailed are scarcely heard of.”

DISEASES OF HORSES.

Diseases among horses have not been unusually prevalent or fatal. Comparatively few cases are reported from northern latitudes. The most frequent mention is made of “blind staggers,” which has prevailed in Berks County, in Pennsylvania; Calvert and Queen Anne’s, in Maryland; Sampson, Tyrell, Duplin, Hertford, and Orange, North Carolina; Bartow, Richmond, and Walker, Georgia; Calhoun and Etowah, Alabama; Uvalde, Rusk, and Red River, Texas; Benton, Arkansas; Sevier, Meigs, Alabama; Coffee, Monroe, Jefferson, Robertson, and Knox, Tennessee; Butler, Cedar, Newton, and Taney, Missouri.

Lung fever is noticed in Indiana County, Pennsylvania, in the lumbering region, and in Beaver and Montgomery; in Gloucester, New Jersey, with more than usual fatality; in Kent, Maryland, of a mild type; in Princess Anne, Virginia; Cass, Missouri, a few cases; Geauga and Medina, Ohio; Cass and Tuscola, Michigan, and Stearns, Minnesota. In Fulton County, New York, a cartarrhal affection, accompanied by croup, resulted in death in a few cases. Glanders is less known than formerly; a few cases are reported in Nelson, Montgomery, Patrick, and Fauquier, Virginia; in Meriwether, Georgia; in Hardin, Texas, it has been worse than ever before; and in Noble, Ohio, a few cases are returned. In several counties in Texas something like scours, in an epidemic form, has been fatal. It is stated that opium and camphor, administered early, is a very efficient remedy. Three per cent. of the horses of Prairie County, Arkansas, have yielded to the insect pest—the buffalo gnat. In Pike County, Illinois, an unknown disease, which has been fatal in some cases, has for its symptoms stiffness of limbs, sore mouth, and swollen tongue. Many horses in Williamson County, Illinois, are afflicted with blindness. “Distemper” is reported in many places, and isolated cases of tetanus or lockjaw, yellow water, colic, and other forms of disease are reported. The following extracts further illustrate this subject:

Cumberland, Maine.—Some horses lost early in the winter by an unusual disease—taken with loss of appetite, general debility, a gradual sinking for several days, and in some cases for several weeks. Most cases fatal. In some cases the animals had the appearance of being poisoned with white lead.

Hampden, Massachusetts.—A number of horses have died in one stable in Chicopee. Symptoms: first, loss of appetite, which returns in a few days; bunches as large as walnuts come out on different parts of the body, and break and discharge putrid matter; legs swell; in three or four days there is a discharge at the nose similar to that from the sores. Fatal in five to seven days. No cases of recovery. The disease was introduced by a horse from Canada.

Washington, Pennsylvania.—Distemper exists to some extent, also a malady called the “throat disease,” or the “head disease;” six deaths occurred from it. Horses when attacked refused food or drink until half starved, when the throat was much swollen, eyes dull and heavy, head drooping, if forced to move, holding it in one position with nose up and forward as if it pained them to move the head; they would then eat nothing but choice food, swallowing with difficulty. Various horse liniments were used, many cures were effected.

Elk, Pennsylvania.—More than the usual number of cases of lung fever, or “catarrh.” Fatal in a majority of cases. Some of the finest horses in the county have died of this disease.

Doddridge, West Virginia.—Some unknown disease. Symptoms: swelling of the jaws and head, which terminates in running sores; the animal refuses to eat, loses flesh rapidly, and soon dies; no known remedy.

Wilkinson, Mississippi.—A disease called “distemper,” very contagious, malignant, and fatal, has prevailed for three months, and has not yet ceased, in a part of this and Amite Counties, and adjacent parts of Louisiana; the mortality has doubtless been caused in great part by the treatment adopted. My own cases, and my son’s thirty miles away in Louisiana, all recovered as well as all others similarly treated, while others differently treated mostly died. While using my saddle and buggy horses I noticed first some difficulty about putting down the head and drinking, and external swelling over nasal canal, extending from near the opening of the nostril toward the eye and resembling “big head.” The coat became staring and harsh. The glands within the space between the arms of the lower jaw and at its junction with the neck and tonsils swelled; the latter very much; the former in some cases much and in others little. There was also swelling about the larynx and pharynx so obstructing the action of the muscles of deglutition as to render the swallowing of liquids very difficult and in some cases utterly impossible. In attempting to swallow, a part, and as proved by experiments, in some cases, the whole of the fluid escaped by the nostrils, and this, whether the head were held up or down, while drinking. This continued from two to fifteen days, (to attempt to drench in this condition is unwise, cruel, destructive.) The loins were weakened and the hind legs somewhat weakened and defective in action. Opening the external tumors at any stage afforded prompt relief of all the symptoms, and the discharge from a very small tumor was enormous, the pus being diffused extensively

through the loose tissues. When no such opening was made, sooner or later a profuse purulent discharge took place from the nostrils, usually beginning with one, and after two to fifteen days the other. The loose cellular tissue was readily infiltrated with pus, and the glands enlarged all along down the neck to the trunk. The blood infected induced a typhoid or rather pyæmic condition.

Properly managed, no internal treatment is needed, and in most cases is very injurious if attempted. The animal should be kept dry and comfortably warm, but in good weather permitted to run out during the day. Although he may not be able to swallow any liquid, he can readily eat, and should have roots and fruits, and well-moistened hay, fodder, meal, shipstuff, &c. As soon as any tumor appears, bathe well night and morning, till the tumor opens, with kerosene. One, two, or three applications have, in every instance that has come to my knowledge, effected the opening in twenty-four hours from the first bathing, whatever the stage of the malady. If it should not open the tumor, or the symptoms are too urgent to allow delay, open freely with a sharp knife; and every animal so treated will get well promptly, however hopeless the case may seem. Of course, the horse must not be used till convalescent.

Bee, Texas.—A kind of farcy has proved quite fatal. It commences under the jaw and spreads over the entire body, accompanied with slow fever. The loin distemper is quite prevalent among horses on the prairies. It is contagious between the sexes.

Victoria, Texas.—Several cases of a disease which commenced with a swelling of the head, particularly about the lips; considerable secretion of water from the eyes; wasting of the flesh; no eruptions of the skin. Of six cases, three proved fatal, after lingering six to eight months, losing the hair from their manes and tails several months before death.

Williamson, Texas.—For the past three or four years, in this and adjoining counties, at least one-half of the colts have died before two years old. I know of no name or remedy for the disease. It runs through the young stock in the fall, and what it does not then kill generally die in the winter. They become stiff in the legs, and walk with difficulty. Many of them swell about the head and breast, until the swelling breaks and discharges bloody water. At such times, flies are apt to blow the sores, and if not attended to in season the screw worm will kill the animal. Calomel is the best remedy I have used to destroy these worms; one or two applications to the wound will generally suffice.

Horses, cattle, sheep, dogs, and, in fact, all animals, are liable to be destroyed by this pest in the fall season. When wounded, from any cause, the flies soon find the fresh blood, and deposit germs of myriads of worms, which, in a few days, are full grown, and about half an inch long. This is a critical time with the stock-raiser, for if not attended to early the evil is much more difficult to cure.

Dunn, Wisconsin.—Last fall the influenza took off a great many colts in some localities. In one neighborhood about thirty died. They were pastured on the common, where there is plenty of unimproved land, and it was supposed by some that the disease originated from the drinking of stagnant water in a lake in the vicinity.

Waushara, Wisconsin.—There has been a disease among horses from which quite a number have died. The horse's throat seems to swell and close up the passage. It is a new thing for this county, and no one knows how to treat it successfully.

Napa, California.—Dr. Lockwood reports a disease as follows: "A disease, familiarly called the 'crazy disorder,' has prevailed to some extent among common stock horses, coming from the southern counties of this State, where it has existed for some years. It is characterized by a low state of the system, induced by poor feed. Head symptoms are predominant; animals attacked often die, and probably none ever recover their normal condition. One so diseased is worthless; will not repay further care. Mr. N. Coombs has lost fifty head this winter, exclusively among his inferior stock." The horses referred to are what we here call Spanish horses, and are usually left in large bands, without special feed or care, like the wild horse of Mexico.

DISEASES OF SHEEP.

Diseases of sheep are less general than for two or three years past, mortality and the slaughtering house (in former years) having reduced the numbers of the weak and diseased victims of neglect.

Foot-rot is still the most prolific source of loss, most abundant in Ohio, severe in portions of Michigan, and found to some extent in other Western and in the Middle States, with very few cases in New England and the South, and none in the Territories and Pacific States. Scab is most general in Texas, is reported in several counties in Missouri, and is occasionally found in all sections east of the Mississippi, though few cases are reported in the Atlantic States east and south of New York.

"Rot" has occasioned some loss in Alabama and Mississippi. "Grub in the head" has been reported in very few counties. A Georgia correspondent (Doooley County) reports five per cent. loss from "a new disease, the sore nose." It is a frequent report that there is no disease among sheep that are well fed and properly treated. Cruel neglect and reckless disregard of the comfort and health of flocks account for nearly all the losses reported. Our correspondent in St. James Parish, Louisiana, has lost about twenty-five sheep from the "mumps, the throat swelling, the disease extending to the head, when death occurs;" and he states that he has lost ten calves from apparently the same disease. The following extracts are made from correspondence:

Bexar, Texas.—There are several, but the most alarming and of marked significance is the disease known as the "scab," which is allowed to infect our whole pastoral country. The extent of its ravages in Western Texas, in the counties of Bexar, Banderá, Medina, Atascosa, Comal, and all adjoining counties, which are by nature the paradise of pastoral pursuits, the sheep for the last three years have almost entirely vanished. In Kendall County, forming a radius around the town of Boerne, the decrease has been on a moderate average 70 per cent. The flock of the lamented George Wilkins Kendall, once the pride of this section for Merino breeds of sheep, has ceased to exist. This is but a sample of scores of flocks destroyed by this calamity of "scab." In the other counties the ratio of decline has undoubtedly been one-half.

The lornbriz is so much on the decrease as to be rarely mentioned last year. The lornbriz is now believed to exist in *all* lambs, and *post mortem* examinations of healthy, young lambs, accidentally maimed or killed, have developed in the stomach the veritable reddish hair-like worm, but in small numbers. It is believed that in strong, healthy lambs these internal parasites are thrown off by nature; while in weak, delicate subjects they multiply by millions, until the poor, suffering creature is literally eaten up. The cause of lornbriz is to be found in the poor condition of the ewes during winter and at lambing time, and consequent lack of milk to sustain and develop the lamb after birth. The offspring of strong, healthy ewes are never affected by it. Our remedy is equal parts of common salt, sulphur, and copperas, to be given at intervals of several days for three or four times. The preventive is to keep the ewes in good condition.

Maverick, Texas.—None die from scab, but the lambs while so diseased do not thrive. After the wool falls off they get well without applying any remedy. I have tried the Magney plant, which grows in some portions of this country; simply roasting it in the fire in order to make it more juicy, then rubbing the diseased parts with it until all the scurf is off; with two or three applications the disease is arrested, and a new, healthy growth of wool follows on the bare places. I am under the impression that the juice of this plant could be made an effectual remedy for the scab.

In Morgan, West Virginia, hoof-rot has existed; Merinos a failure: 1,500 died during the past two years.

In Montgomery, Maryland, native sheep have been healthy; of 1,200 Merinos brought from Ohio here, fully three-fourths have died.

In Marion, South Carolina, lambs dropped last spring became unhealthy, and one-third have died.

In Caldwell, North Carolina, when kept in pasture of small area several successive years, they become affected with *rot* in many cases.

In Washington, Pennsylvania, three-fifths of the sheep have foot-rot; the most successful cure has been to remove the flock, after paring off the diseased part, and dusting over with blue-stone, to a field which has not been pastured by diseased sheep; a hilly, dry, and stony field is preferable; feed small quantities of flour sulphur.

The ravages of dogs are perhaps more injurious to sheep husbandry than any disease named above. The report is full of evidence on this point.

The counties in North Carolina that report the dog disease are as many as those which name ailments of sheep.

In Virginia "dogs are more destructive than all diseases."

In Marshall County, Alabama, the loss is 30 per cent. from "starved dogs."

In Georgia it is stated that "the dog is the worst disease afflicting flocks," and that "few farmers raise sheep on account of dogs."

In Monroe, Tennessee, "the loss by dogs is 300."

Dogs in Missouri have killed more than all diseases combined.

"About 300 head of sheep have been destroyed by dogs the past year" in Sullivan, Indiana.

Our correspondent in Ripley, Indiana, after referring to dogs as the great terror of the wool-growers, says truly: "Our legislators are very cowardly upon the subject of making laws to protect sheep husbandry." Similar statements are made from Wisconsin and Michigan.

DISEASES OF SWINE.

The diseases among swine, however various, are popularly referred to "hog cholera," as a rule. Whenever symptoms are detailed in the returns, they are given as aids in determining the character of the malady. The losses reported are less this spring than usual, indicating far greater soundness of health than in some former years. There is still more of disease and death among swine than in any other class of farm animals, and probably less is accurately known of the character of the maladies afflicting the species.

Having superior care and better feed in the Middle and Eastern States, there is comparatively little loss reported in those sections. In York County, Maine, some cases of disease have been reported among improved breeds. The preventive practice of feeding a tablespoonful of spirits of turpentine in milk to a hog over six months old obtains in Chautauqua, New York. Some loss is mentioned in Columbia County. Stock hogs from Indiana have sickened in York, Pennsylvania, and 30 per cent. of that class have died. Abortion has prevailed in Dauphin, attributed to over-feeding with unground corn. Two hundred and fifty pigs under six months old have died in Washington, the remedies applied being salt and alkaline substances; and some fatality is reported in Cumberland, Perry, Indiana, Beaver, Union, Fulton, and Berks; in the latter county the symptoms reported are "loss of appetite, weakness in back and hind legs, with a nervous twitching of the head, which gradually extends to the whole body."

In Montgomery, Maryland, one-half to three-fourths of the hogs of certain neighborhoods have died. The loss in Howard is estimated at 3,000, and slight losses have occurred in Baltimore and Kent.

More attention has been paid to swine in some parts of Virginia than usual. In portions of Gloucester disease has nearly swept away the race of swine; in some instances in Alexandria every individual has been lost; in a portion of Clarke 70 to 80 per cent. have died; loss 25 per cent. in Fairfax; some unknown disease has carried off numbers in Princess Anne, and losses have occurred in Albemarle, Roanoke, Pulaski, Northampton, Cumberland, Nelson, Lee, Prince William, Highland, Lancaster, Surry, Smythe, and Patrick.

A considerable amount of mortality is reported from North Carolina; a loss of 50 per cent. is declared in Watauga County; from 50 to 75 per cent. in certain stocks in Currituck; 40 per cent. in portions of Chowan; large numbers from a new disease, "of a lung fever type," in Gaston; 20 per cent. of the fattening swine in Haywood; 33 per cent. in Rowan; 25 per cent. in Davie; 20 per cent. in Lincoln; 30 per cent. in Greene; nine out of every ten attacked in Yadkin; 20 per cent., mostly near fruit distilleries, in Stanley; 33 per cent. in Alexandria; and smaller losses in Sampson, Union, Surry, Terrell, Duplin, Rockingham, Jackson, Macon,

Caldwell, Rutherford, Wilkes, Hertford, Burke, and Orange. Great fatality, involving three-fourths of the entire stock of Newberry, South Carolina, is reported, and small losses are mentioned in Spartanburg and Lexington, in the same State.

Georgia has suffered little loss; 50 per cent. is reported in Clinch, 30 in Morgan, and small losses in Bartow, McDuffie, Lumpkin, Jackson, Harris, Catoosa, Floyd, Butts, Forsyth, Towns, Pike, Walker, Clay, Milton, Clayton, Putnam, Newton, Pulaski, White, Franklin, and Heard.

Our correspondent in Dallas, Alabama, lost 44 out of 56 old hogs; pigs were not so generally attacked. In Lawrence a loss of 25 per cent. is returned, but the mortality was reported slight in Tallapoosa, Marshall, De Kalb, Calhoun, Clarke, Jefferson, Etowah.

Very little disease among swine is reported in Mississippi; a few cases have occurred in the following counties: Attala, Kemper, Neshoba, Pike, Amite, Tippah, Yalabusha, Yazoo, Lafayette, Winston, and Carroll. In Gonzales, Texas, a disease, assumed to be "an affection of the lungs," carried off most of the pigs and a few hogs. The fattest were first to fall; of a litter of pigs, fat and apparently healthy at night, half would sometimes be found dead in the morning. In Upshur, a loss of one-tenth of the pigs is credited to carelessness in permitting them to eat *ad libitum* freshly ground cotton-seed. A few losses appear in Austin, Collins, Harris, and DeWitt.

There is scarcely a live pig in Benton County, Arkansas; the result of a cough and wasting away. A loss of 20 per cent. is returned from Newton County. Large losses occurred in Clarke, attributed to "too much cotton, and want of corn." One third of the stock in Jackson County died, generally in full flesh. Losses are also reported in Johnson, Montgomery, Pulaski, Sebastian, and Washington.

Less mortality than usual has occurred in Tennessee; very few counties reporting heavy losses, among which are Humphreys, (60 per cent.,) Smith, (50 per cent. of all hogs since November,) and Greene, (40 per cent.) Smaller losses appear in Sumner, Sevier, Meigs, Williams, Giles, Weakley, Campbell, Coffee, Sullivan, Montgomery, Monroe, Henry, Jefferson, Johnson, Robertson, Hardiman, and Hickman.

In Morgan, West Virginia, half of the pigs and one-fifth of the fattening hogs died last fall, and the disease is commencing its ravages this spring. Losses are also reported in Berkeley, Brooke, Cabell, Fayette, Jefferson, Tyler, and Wayne.

Our correspondent in Fayette, Kentucky, where "hog cholera" has prevailed to a great extent, with heavy losses, sends the following report:

Our club was induced last spring to appoint a committee of scientific members to investigate this disease, which they did by making very thorough post mortem examinations of the hogs that died of the disease. They have not yet made a formal report of their proceedings, nor will they until they make many more examinations, which they will do as opportunity presents. They have observed that there is no constancy in the appearance of organs invaded by the disease. In one the change of structure will be observed in the lung, in another the stomach, another the small intestines, another the large bowels. The microscope, however, revealed a constant change in the blood, the globules being crenated or shrivelled, and a large increase of the colorless globules. The impression was made upon the committee that the seat of the disease was the blood, the constitution of which was changed by some poison acting upon it, of the nature of which they are not yet satisfied. Acting upon this view, they have recommended a treatment and preventive which has been largely used and has generally been very successful, in some cases, however, proving to be apparently insufficient. In the latter cases it is believed that the prescription was used in too small doses. For a preventive they recommend the carbolic acid in strong solutions, (dissolved in glycerine and as strong as possible,) to be given in doses of twenty drops three times per day to each hog or shoat of four months old; younger ones smaller doses. Milk or slop of any kind which the hog will eat, is a good vehicle in which to administer it; say for ten hogs take three teaspoonfuls of the solution, put in two or three gallons

of milk or slop; mix well by stirring; pour into a trough sufficiently long for all the hogs to get to readily; then let them go to it all at once. It will be better where there is a large lot of hogs to bring them to the trough in detachments of not more than twenty. This course, if persevered in for a week, when there are any indications of the disease, it is believed, will arrest it.

The curative treatment is very similar—carbolic acid in the same amount three times per day, adding to each dose a tablespoonful of *sulphite of soda*; if the hog is too sick to eat, catch it, turn it on its back, and pour the medicine into its mouth; in this case a half pint of milk is a good vehicle in which to administer the medicine.

The Spencer Reporter makes the following statement:

Hog cholera has prevailed, and still prevails. Its presence is confined to no particular district or locality, but is spreading in its visitations. When it becomes present on a farm it generally takes off all the young pigs, and from one-fourth to three-fourths of the rest of the swine, leaving the surviving in an unthrifty state. Within the last fifteen years two-thirds of the farms have been visited with it, and some farms more than once. The effect has been to discourage the raising and feeding of hogs, which was a specialty.

In Anderson, Kentucky, the loss is estimated at 500 head; in Hardin, 33 per cent., and the disease still spreading; in Bourbon, \$5,000; in Whiteley, 50 per cent.; very heavy in Clarke, while in Christian the loss is placed at 25 per cent., 20 per cent. in Kenton and Laurel, about the same in Graves, and less in Shelby, Hopkins, Scott, and Warren.

In Clarke, Missouri, the loss is estimated at 50 per cent., "confined principally to pigs up to six months old;" "many deaths from insufficient shelter, but all attributed to cholera," is written from Bates; loss 1,000 head in Holt, 375 in Bates, 200 in Pettis, and small percentages of loss in Benton, Cass, Dent, Butler, De Kalb, Montgomery, Marion, Mercer, and Vernon.

Thirty-six counties in Illinois report losses from diseases of swine, though the damage is comparatively slight, with few exceptions. Our Pulaski correspondent says that some hogs have died, but in most instances it seemed to be the result of poor feeding, or feeding without proper admixture of cooked food or green pasture; and he thinks that hogs cannot be profitably raised under the present careless treatment. The reporter in Williamson attributes their small loss of 5 per cent. to the fact that last year's corn was thoroughly matured, and hogs better cared for than usual; though he thinks that some septic or other external influence, independent of feeding or other treatment, gives rise to hog cholera. In Washington, disease has more generally prevailed, and has been attended with greater loss than for many years. Losses have been quite heavy in portions of Sangamon; are estimated at 3,000 in Cass; 450 head in Clinton; 25 per cent. in Scott; 20 per cent. in White and McDonough; 15 per cent. in Menard; 10 per cent. in Edwards, "prevailing almost exclusively in rolling districts;" and is also reported in Adams, Crawford, Champaign, De Kalb, Franklin, Fulton, Grundy, Hancock, Henderson, Jersey, Knox, Lawrence, Logan, Mercer, Menard, Marion, Madison, Morgan, Pope, Pike, Stephenson, Stark, Piatt, Pulaski, White, and Warren.

The loss from hog cholera or other maladies in Indiana is less than usual. In Union County "disease has entirely disappeared" within the last twelve months; it has almost disappeared in Rush; is found "only in the vicinity of flouring mills and distilleries" in Switzerland; "loss small compared with other years" in Harrison; Vandenburg "has not been so free for twelve years;" has not been so destructive as formerly in Marion, "though one-fifth of all the young die;" since July there has been less complaint in Bartholomew than for several years; loss in Cass has been 200 head; it amounts to one-third of the young in Posey; and losses have occurred in Floyd, Wabash, Howard, Jefferson,

Martin, Newton, Pike, Washington, Carroll, Ripley, Delaware, Clinton, Greene, Parker, Miami, Scott, Spencer, Vermillion, Sullivan, Gibson, and Ohio.

Ohio appears to have been nearly exempt from hog cholera. At a distillery in Lucas from 300 to 400 head died; about one-fifth of the swine brought into Greene from Indiana for fattening have been attacked, and a few cases are reported in Jefferson, Holmes, Warren, Fairfield, and Franklin.

The swine of Michigan are reported healthy, only one county, Cass, returning losses, which have amounted to one or two hundred in a locality.

A disease of the throat is reported in Green County, Wisconsin, where it has prevailed to a limited extent. "The first appearance would be a dark spot or spots on one or both sides of the throat, and the hog being unable to eat. It has usually proved fatal in from 24 to 48 hours; some call it diphtheria." A few cases of hog cholera are mentioned in Dane County, and several fattening hogs in Washington have died suddenly from some unknown cause.

Of twenty counties reporting in Minnesota, Meeker only presents evidences of disease, in which forty pigs were lost, "caused by filth and improper food, and not from any cause beyond the pen in which they were confined."

Small loss is reported in Iowa; in Louisa County, 25 per cent.; 150 head in Lucas; 100 head in Clarke; and in Black Hawk, Lee, Wayne, Fremont, Dallas, Jasper, Tama, Appanoose, Madison, and Bremer, a few cases are mentioned. Only Nemaha and Cass, in Nebraska, report losses, and Leavenworth, in Kansas.

EXTRACTS FROM CORRESPONDENCE.

EXPERIMENTS WITH SEEDS, ETC.

A correspondent, writing from Morgan County, Illinois, says:

My experience this last year with carrots, and especially with *white Silesian sugar beets*, for stock of all kinds, has both surprised and gratified me. The middle of May last, I had a piece of ground on which apple seeds had failed. I sowed a part of it (less than one-quarter of an acre) with beet seeds, with a common drill and weeder, without replotting the ground, which had become beaten down by the rains as hard almost as the road. The drill sows six rows at a time, eight and ten inches apart, and cultivates or weeds in the same way. It took perhaps half an hour to sow the seeds, and half an hour each at different times to cultivate or weed them, and perhaps half a day to thin them out; after that they covered the ground wholly over and needed no more care. The ground was ordinarily rich. With this extreme negligence, I had fifteen wagon loads of the finest beets, being at the rate of over thirty tons to the acre. I sold two and a half tons at \$8 per ton, fed my cow and calf, two hogs, and three horses, all they would eat all winter, and have three tons more than I can use, though we have used no corn at all for anything but the hogs. I fed cut roots, with a pint of wheat bran each mess. I have never before had my horses, hogs, cow, and calf come through the winter so well and free from all symptoms of disease; their hair is as smooth and glossy now as though they had just come off from a clover pasture. I conclude that roots, as part feed at least, are worth much more than their simple value as food in the extra health they insure to the animal, and I now intend to raise them on my farms on a larger scale. I had no idea they could be so easily and abundantly produced. I ought to state, however, that it took me more than a week to teach one horse to eat them, and I did not succeed until I boiled one or two of them, and mashed them in bran and oats so fine that he could not eat one without the other, and after he found it would not poison him, he ate them greedily in the raw state.

A. J. Hamilton, superintendent of Western Experimental Farm, Indiana County, Pennsylvania, writes :

Experiments upon this farm have been carried on with uniformity, and I feel that not a sufficient interest is felt in regard to them. Among the different varieties of wheat sown I may mention the Jennings, Touzelle, Brittany, Talavera, Rough and Ready, Salt, and Shoemaker. They all look remarkably fine. Only one variety of rye is sown, the Bremen, and from its appearance now I think it a standard variety. I have sown the Tappahannock wheat very extensively, and find it the standard variety here. The yield last year was 30 bushels to the acre. Week's White and White Bearded were sown last fall, together, one acre each, ground plowed alike and manured, to test the relative merit of each. I have also sown the French White Chaff Mediterranean wheat; it is next to the Tappahannock in yield. A number of experiments were made last year with potatoes by planting them whole, cut, medium, and small seed. The whole seed showed a greater return, by 25 per cent., over the others. Experiments are also being made in planting the butt and end grains of corn. Nothing very definite has been reached yet in regard to this.

Dixon County, Nebraska.—Two years ago I received from the Department of Agriculture one-fourth of a peck of Arnautka spring wheat. It was sown and has done remarkably well, producing at the rate of 25 to 30 bushels per acre, and coming to perfection earlier than the common kind. It has proved itself very suitable for our climate, and most of the farmers that see it desire to obtain it for seed. The introduction of this wheat has conferred a great benefit on this section of the country. I sowed 12 bushels this spring, and sold and gave away 4 bushels; all from the original one-fourth peck. Ere two years elapse, it will be the principal variety sown in Dixon County.

Miami County, Kansas.—The experiment made on the culture of hops by W. R. Wagstaff has proved a failure, and has been discontinued. Outlay some \$4,000; income, *nothing*.

THE DAIRY BUSINESS.

A Medina County, Ohio, correspondent writes as follows :

A sort of agricultural fever, which may be termed the dairy fever, is just now prevailing in this county. The talk of farmers whenever they meet is of cows, cheese, butter, cheese factories, probable prices, &c. No less than three cheese factories are being built in Hinckley now. This number in a little township of five miles square, containing less than a thousand inhabitants, is altogether in excess of public requirements. Such a raging fever can have no other termination than collapse, fatal to many. If the harm of such a fever was confined to the dairy farmers alone, I would say nothing. But innocent people suffer. While farm is being added to farm, our population is rapidly decreasing. One mechanic after another is leaving for want of sufficient business to support him. The same is true of professional men. Our school-houses are not half filled. The Sabbath is desecrated. Our churches are becoming feeble and dying out. Every interest is injured that this one may prosper. I look upon dairying, in the manner it is now being conducted, as injurious to our best interests.

AGRICULTURE IN ARKANSAS.

P. L. Anthony, of Little Rock, disgusted with cotton at low prices, and all other products at high rates, in an agricultural region suited in soil and climate to the growth of everything needed for comfort and luxury, desires to promote immigration and colonization for some purpose beyond mere cotton-growing. He says :

Cotton is the curse of this country. It is produced as a means of procuring everything. Even Indian corn, that can be produced here at less expense than elsewhere in the Union, is imported in large quantities. At gathering time last fall the corn grown on the river above and brought here in the shuck, sold at from \$1 10 to \$1 25 upon our levee. Every steamboat now brings sack-corn, which sells at from \$1 30 to \$1 35 per bushel. We depend wholly upon other States for flour, potatoes, turnips, cabbages, celery, horse-radish, fruit, and a variety of things, at high prices, which might be produced here at a low price. Bacon, beef, butter, lard, and eggs, are among our impor-

tations. To this list of agricultural productions we may also add all sorts of manufactures—sash, doors, window blinds, furniture, wagons, carriages, hubs, spokes, felloes, bows, hames, ax-helves, auger-handles, ox-yokes and bows, and almost everything you can name.

Mechanical labor is worth from \$3 to \$5 per day; farm labor from \$18 to \$25 per month; day laborers in town want from \$1 to \$2 per day. With cotton 11 to 12 cents as the base for these prices, you may well conclude we are fairly on the road to ruin. When I add that potatoes are worth \$1 50 and turnips \$1 per bushel; eggs, 25 to 50 cents per dozen; fowls, 35 to 50 cents apiece; cabbages, 25 to 75 cents per head; and a handful of greens a dime, you may judge there is great need for some one to make endeavors to have these things produced at home. A dish of strawberries and milk for a family of six, say a half-gallon of each, would not cost less than \$1 50 to \$2.

WASHINGTON TERRITORY.

Our correspondent in Pierce County, Washington Territory, writes as follows:

Washington Territory contains, in round numbers, seventy thousand square miles, with a great variety of soil, climate, and resources. In this vast region there are less than twenty-five thousand inhabitants. The Cascade Mountains extend northward from Columbia River, which forms the southern boundary of the Territory, to the forty-ninth parallel of latitude, and beyond into British Columbia. The Territory is thus divided into two equal parts; that east of this mountain range being principally a prairie country, with extensive grazing grounds, and rich valleys of arable land; while the portion west of the mountains is in the main timbered lands; yet it too is intersected by many valleys, with fertile alluvial bottoms.

The climate of these two divisions differs as widely as the soil and exposure, the eastern being in the winter comparatively dry and cold; the western, warm and rainy. In the eastern region the autumn and winter are so dry that the rich bunch grass of the Great Columbia plain will actually cure upon the ground, and remain valuable feed, usually enabling the cattle to fatten on the grazing grounds, even during the winter. But on the western slope these seasons are so moist and temperate, that the turnip and the grass commonly grow until the middle of December, and frequently in sheltered places the green grass may be seen all winter. In this division cattle usually require feeding and shelter from the winter storms, but never for more than two or three months.

To speak more particularly of the western division, the northern portion is known as the Puget Sound basin, and the southern as the Chehalis and Cowlitz Valleys. The surface is covered with magnificent forests of evergreen, consisting mainly of the fir, of which there are three varieties. There is found also the white cedar, the hemlock, the spruce, and, in the bottoms, balm or cottonwood, alder, maple, ash, and crab-apple.

This is emphatically a dairy district. The growth of grass upon these rich lands is almost constant, and the yield is enormous. There is spring water, pure and soft, and abundantly distributed. Add to this the cool nights, and few hot days, and it makes all that is desirable for the successful development of this great interest.

Twelve rivers have their sources upon the western slope of the Cascade Range, and these, with a current rapid at first, but afterward more gentle, deposit rich alluvial wash as they reach the sound. These alluvial bottoms will average two miles in width, while on the adjacent table lands there is a larger area of soil suitable for grass.

After the magnificent forests, the wonder of this region is its climate. Averaging 40° Fahrenheit during the winter, and 63° in the summer, and this up to the forty-ninth parallel, it is not strange that people are incredulous when they hear of this mild climate. In winter the south and southwest winds prevail, and these, with the warm ocean current of the Pacific, corresponding to the Gulf Stream of the Atlantic, give the western coast of the American continent a climate which rivals that of the western shores of Europe.

With resources so numerous and varied; with coal underlying the whole district, iron ore in the mountains, limestone upon two of the islands in the sound, with an inexhaustible store of the most excellent ship-building material, and with the extensive and valuable fisheries of the northwest coast, we may look forward with confidence to the development of a great country on this coast of the American continent.

STOCK IN IDAHO.

Ada County, Idaho Territory.—Experience is rapidly demonstrating the fact that Idaho possesses natural facilities and advantages for the cheap and successful growing of stock of all kinds not surpassed in any

of the Northern or Western States or Territories. The healthfulness of climate, excellence and abundance of water, the choice quality of native grasses and herbage, which cover the extensive unoccupied table lands, and the mildness of the winter season, combine to render Idaho all that could be desired for stock-growing purposes. It is claimed that no portion of the continent in this latitude and of this altitude is favored with winters so mild. During the past four winters stock have, in many instances, fattened, and in all cases were in good, thrifty condition in the spring, when allowed to forage at large, without prepared food or shelter. Our local markets are supplied with the choicest beef and mutton, fresh from the "range," every month in the year. Stock-growing, as a thorough and systematic business, has been but recently engaged in to any extent worthy of mention.

AGRICULTURE AND STOCK-RAISING IN TEXAS.

Gonzales County, Texas.—The great mania for driving beef to Kansas is likely, in fact certain, to produce a great revolution in the industrial pursuits of this county. Already about 12,000 beeves have been started from this county, and at least as many more are now in herd and being gathered. It is believed that not less than 30,000 will leave this county this season. Not only all beeves from two to four years old are being driven, but it is estimated that at least one-third of the stock cattle will be disposed of, and perhaps more. Good men of the country rejoice at the fact. They are tired of seeing so fertile and pleasant a country devoted to raising wild cattle upon a plan that demoralizes our youth, retards internal improvements, and that only furnishes room for speculators to enrich themselves upon the labor of others. It is the wish of all that the cattle business be drawn into such limits as to make it profitable to those engaged in it, and enable the owners of stock to have a voice in fixing the value of their property. If four-fifths of the cattle can be taken from the country, the one-fifth left will pay better than the whole.

Refugio County, Texas.—A tithe of the capability of this county has not been reached in her best developed interest. Texas has been designated as the meat-house of the United States. If she be so now, what would she be with Ohio, Kentucky, Illinois, and Missouri farmers to develop her capabilities? My opinion, formed from twelve years' experience in Texas, (I was for thirty years a Kentucky farmer,) is, that from the same piece of land, and in one year, three crops may be taken, either of which, judiciously fed, would make as much flesh as a crop of corn in Kentucky or Illinois, similarly fed. You ask what would be the crops. First, corn; after that is laid by, we have a grass here known as buffalo grass, but I regard it as a species of millet, that springs up, making a heavy yield, and equal to the best timothy; after that is taken off, either peas, beans, sorghum, or turnips may be planted; giving, as before stated, three crops, either of which, in our mild climate, would equal a crop of corn in any of the Western States in flesh-making capabilities.

FISH OFFAL FOR SWINE.

Nueces County, Texas.—Hogs have been healthy the entire year. An extensive hog ranch has lately been established on Padre Island. Immense quantities of fish are taken daily with a seine, cooked in large kettles, and fed to the hogs. Up to this time they have done remarkably well; and, as the supply of fish is inexhaustible, and at no cost but

the labor of catching, the proprietor expects to realize large profits. A great many hogs are being fed at the slaughter-pen, where parties are killing cattle for the hides and tallow—tallow extracted in steam tanks. After the tallow is drawn off, the steamed offal is fed to the hogs. Some of these hogs have been shipped to New Orleans. I have heard no complaint against them, although the offal is very offensive after coming from the tanks.

THE FIRE BLIGHT.

Lucas County, Ohio.—The fire-blight in pear trees has been very severe this season on clay soils. On sandy soils, which are slightly mixed with rotten or decomposed iron ore, they have almost entirely escaped. Query: Is it not a deficiency of iron in the soil which occasions the disease?

REPRESENTATION OF HUSBANDRY.

Regret is felt by the true friends of agriculture, that so few farmers should be found in the halls of legislation, and especially in Congress. If it is true that national detriment results from the non-representation of tenant-farmers in the British House of Commons, an affirmation recently made as a fact to be deprecated, how much greater the loss from lack of agricultural representation in a nation of independent, thrifty, and intelligent farmers! It is not that there is the slightest difficulty in finding men of the breadth and brains of an average Congress among the farmers of any individual State; but farmers are isolated, and unable to combine with facility; they are more independent, and thus in feeling and fact are less inclined to "crook the pregnant hinges of the knee where [political] thrift may follow fawning;" they are comparatively single-minded and conscientious, and are therefore averse to the insincerity and sinuosity of the genus politician. While agriculture is thus unrepresented, its interests suffer. Ambitious lawyers, scheming merchants, speculators, and railroad monopolists, men who do not represent the producing interests, and who are at best the expensive go-betweens of production and consumption, have an impelling personal interest in seeking legislative position, and they, therefore, obtain it. Commerce has yearly had its millions in subsidies, improvements of navigation, light-houses, and other aids; railroads have millions of dollars of money and of acres of land, and their managers are permitted to water their stock and drain the resources of the farmers for double dividends. Now, the farmers want very little money in appropriations in aid of agriculture, but they do need an exemption from adverse legislation—statesmen understanding and conscientiously working for their interests—protection against rings of land monopolies and the tyranny of freight combinations. Farmers have the numbers, wealth, and ability to protect themselves, by acting in concert, in combination against combinations, as a grand "ring," which shall overwhelm all mercenary "rings" whatever. To the honest masses of the rural population, both on account of integrity and numbers, must the country look for its salvation from unhallowed greed and knavery in legislation. Then let the agricultural classes combine and make sure they are represented in State and national legislatures.

CINCHONA PLANTING IN JAMAICA.*

The history of Cinchona culture in the West Indies is thus succinctly stated in the report of the present government botanist, Mr. R. Thomson, for the year 1869:

The first attempt to introduce the Cinchona cultivation into Jamaica, though in the main unsuccessful, is instructive. In 1860, when the Indian government commissioned an expedition to proceed to Peru for the purpose of collecting plants and seeds of various species of Cinchona, for the introduction of their cultivation into that country, the secretary of state for India authorized the collectors to transmit simultaneously seeds to Jamaica. Accordingly a large number of the seeds of *C. succirubra* and *C. micrantha* arrived at the end of that year. Mr. Wilson, my predecessor, succeeded in rearing some four hundred plants by the spring of the following year. In November (1861) several of the plants were set out at Cold Spring, (near Newcastle,) and in the following year a few more. One of them is now twenty-three feet high, with the stem near the ground two feet in circumference, and one or two others are eighteen to twenty feet high. About one hundred plants of *C. micrantha* were also sent, and kept here in pots a year or more, and thence again brought back to Bath, to the number of sixty, in August, 1862, which, together with the plants of *C. succirubra* then at Bath, numbered at least two hundred. At this time Mr. Wilson had, by the sanction of the government, selected and prepared a site for a plantation on a spur of the Blue Mountains above Bath, and the same was planted to the extent of three acres in October of that year. This site proved unfortunate, inasmuch as the soil, a tenacious clay, was opposed to the nature of the plant. Besides, the site was too low—perhaps under three thousand feet—for their perfect development. The consequence was that they soon perished, except six or eight that were transplanted to Cold Spring. While the aforesaid plants in pots lay at Cold Spring, some were procured by coffee planters; hence at Windsor coffee plantation there are ten fine trees, sixteen to twenty feet high, one of which I had the satisfaction, a few weeks ago, of seeing in perfect blossom.

The subsequent progress of this important enterprise is thus detailed in the official report of Mr. Thomson for 1870:

The progress of the forty acres of Cinchonas planted here the end of the year 1868 continues highly satisfactory. The tallest plant of *C. officinalis* is eleven feet, of *C. succirubra* nine feet, and of the other species eight to nine feet. The circumference of the stems near the ground of all the species except *C. officinalis*, which is of more slender habit, is from ten to twelve inches—double what they were twelve months ago. I speak of the finest specimens on the plantations, but all the others have made proportionate progress. The diameter of the branches from side to side in some of the best plants is over six feet. In my report for 1869 I observed that these plants had withstood the severe drought, which lasted nearly five months, in the most satisfactory manner. I have now to announce that the opposite extreme of wet weather has prevailed in the past year. From the beginning of August till the end of the year it rained on an average four days a week. I regret that I was not in a position to keep a record of the rain-fall, together with other meteorological observations of the past seasons, owing to my only occupying the new plantation-house near the end of September.

By way, however, of indicating the excessive rain-fall experienced in these months, I would remark that the extraordinary fall of twenty-four inches occurred in thirty hours on the 17th and 18th November.

I have good reason to believe from this and other isolated measurements that during the five months above referred to the rain-fall must have considerably exceeded one hundred and fifty inches. Frequently recurring with the rain-fall violent winds prevailed, which in these higher altitudes almost approach to a hurricane, but from which the plants have sustained very little injury. The incessant rains, however, have caused several ugly land slips, sometimes forming gullies to a depth of about twelve feet, cutting across roads, thereby necessitating the alteration of their course to the extent of nearly a mile. The total damage done to the plantations in this way, and by the consequent rolling of huge stones and roots down the steep mountain slopes, has resulted in the loss of about five hundred to six hundred fine trees. When, however, it is borne in mind that this has been an exceptionally rainy year and that the land is steep in some places and newly under cultivation from a state of nature—the surface denuded, the forest roots decaying, and the soil loosened—the powerful action of tropical rains may be easily conceived, and the extent of injury must be considered as under these circumstances trivial. The plants have thus passed satisfactorily the ordeal of two

*A report of a visit to the Cinchona plantations in Jamaica, West Indies, March, 1871, by C. C. Parry, botanist Agricultural Department, attached to San Domingo Commission.

years, exhibiting the most marked extremes of seasons to which tropical countries are liable.

The forty acres of forest land alluded to in my report for 1869 as having then been prepared for the extension of the plantations, were planted out, except ten acres in December, 1869, in the months of February, March, and April. The plants were placed six and seven feet apart, which gives approximately one thousand plants per acre—forty thousand plants. The average height of these plants is now two to three feet, in a healthy and promising condition. The principle of planting six and seven feet apart (the previous year's planting being ten feet apart) has occurred to me from a similar system of close planting recently adopted in the Cinchona plantations of India—there, indeed, planted four and five feet apart. The prospective result of this close planting is the securing of rapid returns, a few years sufficing to cover the intervening spaces. Each alternate tree is then cut down and the bark sent to market. The operation of cutting down creates room for the spread of the surviving trees, which, in a few more years, again approach and impede each other, and in like manner have to be thinned as before. This extremely thick planting of trees is objectionable, inasmuch as the trees possess a spreading habit. For example, those planted at five feet or at seven feet apart occupy the interspaces in three or four years. At this stage of growth the plant would hardly, I conceive, be worth stripping, as the yield per plant probably could not exceed one pound of dried bark, (value say 2s.) Whereas trees six or seven years old, under favorable circumstances, must each yield five or six pounds of dry bark. On the other hand, however, this system of thick planting has its advantages. The close planting costs but little additional, and the plants are readily propagated. When found too close, they are easily cut down to allow for the expansion of the remaining trees. When thus planted close they keep down the weeds, and hence their culture expenses are lessened.

The entire area of ground planted with Cinchonas is nearly ninety acres. The severe rainy weather of the past year prevented the enlargement of this area by at least twenty acres, for which plants were in readiness. Including these twenty acres, about eighty acres of the forest were felled and partly cleared for the extension of the plantations. This land will be completely prepared for the reception of the plants in a few months.

In May I hope to have forty acres planted (about one thousand plants per acre) with *C. succirubra*, and near the end of the year the other forty acres, together with fifty additional acres proposed to be cleared, planted with *C. calisaya*—the two most precious species. The number of plants permanently planted out is sixty thousand, the number of seedlings in pots forty thousand, and of seedlings in nursery beds ten thousand; total, one hundred and ten thousand. I had intended that the plants required for the extension of the plantations, to the extent of one hundred and thirty acres above alluded to as under preparation for being planted out in the year 1871, should be propagated chiefly from cuttings. But most fortunately two fine trees, at Cold Spring, of *C. succirubra* (one of which is a magnificent tree nine years old and thirty feet high) yielded seeds for the first time in Jamaica, from which, through the generosity of John McLean, esq., I procured in the beginning of September nearly fifty thousand excellent seeds, the result now being forty thousand healthy seedlings. Better plants are produced by seeds than from cuttings. It is also gratifying to state that several young trees in the government plantations have a good crop of seeds ripening and others are coming into flower. The number of seeds likely to be obtained from these young trees in a few months can hardly be under one hundred thousand. Thus the fifty thousand seedlings in course of treatment, and those now ripening on the trees, will suffice to plant all the land proposed to be prepared to the end of 1871, making a total of two hundred and twenty acres, containing about two hundred thousand plants.

I expect shortly to have the honor of submitting samples of Cinchona bark, of the different kinds, to the island chemist for analysis, in order to ascertain the percentage of alkaloids. This operation is more accurately performed when the bark is in a fresh state. It has been recently discovered that the effects of the sun's rays falling on the bark while in a green state is prejudicial to the alkaloids.

In view of the interest felt in this subject by the United States Government, as evidenced in various reports of the Department of Agriculture, the writer availed himself of an opportunity, while connected with the recent explorations of the San Domingo commission, to visit the plantations above referred to, located in the Blue Mountain range, twenty-three miles northeast from Kingston, leaving the latter place on the morning of March 13. The route to the base of the mountains, about seven miles distant, is over an excellent macadamized road, traversing an arid, barren district. The sparsely cultivated fields on either side of the road, occupied by occasional spacious country residences,

are securely fenced in by close growths of the arborescent columnar cactus, (*Cereus eriophorus*;) other cactuses are also frequent, including several *scandent* species, intertwined among the dense thickets of *Acacia*, and other thorny shrubbery, and especially conspicuous, with its bright pink blossoms, the *Opuntia coccinellifera*, on which the cochineal insect feeds.

Further in the interior, the *Cacti* give place to shrubbery of different kinds; an attractive feature in the cultivated landscape being presented in clumps of *lignumvitæ*, (*Guaiacum officinale*,) now showy with a profusion of bright blue flowers, which form a pleasing contrast with its deep, glossy green foliage.

Entering among the foot-hills of the mountain range, the road winds at the foot of rocky spurs overlooking the bed of a clear mountain stream, which is frequently crossed by substantial bridges built of arched masonry. The shrubbery occupying the steep rocky slopes is of a varied character, conspicuous among which are the large orange-colored panicles of the *Agave Antillarum*, now in full flower.

At a distance of nine miles from Kingston the smooth wagon-road is exchanged for a rude mountain trail. In making the ascent frequent small settlements are passed on either hand, the country generally presenting an arid aspect, its native timber-growth having been long since destroyed. The cultivation is here mainly confined to small patches of coffee, now just forming its fruit; while in the vicinity of rudely thatched houses we invariably meet with plantains, yams, and occasional orange or mango groves.

Passing the settlement known as Guava Ridge, by dint of industrious questioning I was enabled, out of a confused maze of mountain trails, to select the one leading to what is generally known as the "Quinine Gardens." After crossing a considerable mountain valley, whose water-course now, in the height of the dry season, is contracted to a small brook, but showing in its wide pebbly bed the high-water mark of the rainy season, the road commences at once the steep ascent of the principal mountain ridge towering far above. By a succession of sharp zig-zags the ascent is gradually effected, the increasing elevation being plainly shown not only by the extended views, but also by a marked change in the character of the vegetation. Here wild roses, mountain blackberries, and ordinary white clover take the place of the more ordinary tropical forms which everywhere border the roadsides at lower elevations.

At an elevation of 4,000 feet above the sea a marked coolness of the atmosphere is experienced, accompanied by frequent showers and fogs throughout the season. Above this point the profitable cultivation of coffee ceases, though plants can be grown up to 5,000 feet; here northern fruits and vegetables flourish and produce abundantly, the winter season barely sufficing to check ordinary growth, the temperature ranging from 40° to 75° Fahrenheit through the entire year.

On this mountain eyrie, at an elevation of over 5,000 feet above the sea, and commanding an extensive view of the adjoining lowlands and the distant ocean, is located the permanent residence of Mr. R. Thomson, the superintendent of the *Cinchona* plantations, a truly enviable location for a botanist, and worthily occupied by Mr. T. and his hospitable family.

Refreshed by a comfortable night's rest after the fatigues of the previous day's journey, in company with Mr. Thomson I made an early start to the *Cinchona* grounds. The path led along the edge of a steep

mountain slope by a narrow artificial terrace, following all the sinuosities of the ridge, and occasionally bringing to view land-slips and precipices terminating in deep gorges below. Stretches of the original mountain forest here disclose their deep sombre shade, heavy with moisture and rank with a dense undergrowth. The shrubbery is here frequently festooned with gray and yellow lichens, indicating a perennial moisture, while the familiar forms of northern club-mosses are strangely associated with tree-ferns and trailing grasses.

The first *Cinchona* plants are set out at the foot of a steep slope rising at an angle of 45° , and extending upward over the recent forest clearing to an elevation of 6,000 feet above the sea. The trees, now commencing the third year from planting out or the fourth from seed, look very vigorous and thrifty, having a smooth, clean, stocky stem, often two inches in diameter at base, and rising to a height of four to twelve feet. Their ability to withstand the ordinary vicissitudes of this climate has been tested by an alternation of unusually dry and wet seasons since planting out, and their survival of harsh treatment from bruises, land slips, and fierce winds is evidenced in frequent distorted specimens scattered over the ground, the vitality of which remains apparently uninjured notwithstanding this harsh treatment. Of the species here growing, including *C. officinalis*, *C. calisaya*, *C. succirubra*, *C. micrantha*, and *C. pahudiana*, the former two have flowered for the first time this season, and I was, fortunately, just in time to secure flowering specimens with early-forming fruit. This early flowering is confined to a few specimens out of many thousands, most of the plants being in too vigorous a stage of growth to allow the process of reproduction. In succeeding years, however, this proportion of flowering and seeding plants will increase rapidly, so that seed to any desired amount can be procured from this source for distribution.

The soil is a rich loam, intermixed with small comminuted fragments of the underlying rock, and enriched on the surface by the vegetable mold of the decaying forest. It has been suggested by Mr. Thomson that small forest clearings, at suitable points, might be planted out with different species of cinchona, and after attaining a fair growth be left to propagate themselves in the form of natural *Cinchona* forests. Mr. Thomson, whose judicious selection of this first successful *Cinchona* plantation in the western world entitles his opinions to great respect, is prosecuting this enterprise with unwearied industry, and expects to add about fifty acres annually to this Government plantation, extending to various elevations, and fully testing the particular qualities of the various species, both as to their adaptation to different soils and climates, and also as to their relative productiveness in the percentage of quinine.

These experiments being directly applicable to any future enterprise in this line in the West India mountain region, renders the results so far obtained of great value; in addition to which the facilities offered in the procuring of seeds and plants from this convenient source greatly enhances its prospective advantages.

Regretting that the short time at my disposal allowed only a limited view of this interesting mountain district, I took leave of Mr. Thomson, and, retracing more rapidly on the descending grade the mountain road passed over on the previous day, reached Kingston late on the evening of March 14.

The practical application of the facts here brought to view may be thus briefly stated:

1. That the peculiar conditions of soil and climate suitable for the

growth of the best varieties of Cinchona plants cannot be found within the present limits of the United States, where no suitable elevations possessing an equable moist, cool climate, free from frost, can be met with.

2. That the island of San Domingo, located within the tropics and traversed by extensive mountain ranges attaining elevations of over 6,000 feet above the sea, presents a larger scope of country especially adapted to the growth of Cinchonas than any other insular region in the western hemisphere.

3. That the existence of successful Cinchona plantations in Jamaica, within two days' sail from San Domingo, will afford the material for stocking new plantations in the latter island at the least possible expense of time and labor.

THE COST AND PROFIT OF THE DEPARTMENT OF AGRICULTURE.

No department of the Government appears to be more strongly intrenched in the affections of the people than that of agriculture. It is the uniform testimony of all informed and unprejudiced minds that its meager appropriations have contributed in larger proportionate measure to the general wealth than the average of the most judicious expenditures of the Government. The evidence on this point is of the most convincing character. It has excited no political antagonism, aiming only to secure the progress of agriculture and the increase of its production, and it enjoys the confidence and secures the coöperation of "the administration" and "the opposition" alike. Occasionally some individual, more solicitous of private than of public advantage, failing to obtain coveted but unmerited favor, is moved to misrepresentation and even vituperation. There are "ax-grinders" constantly attempting the exercise of their vocation, whose disappointment must naturally take the form of opposition; and there is ignorance and prejudice ready to echo faintly the cry of baffled greed.

The accompanying remarks of Mr. Welker, of Ohio, which are placed upon record to show how small an amount of money has been expended by this Department, are suggested by the following petition:

To the honorable the Senate and the House of Representatives:

The undersigned memorialists, citizens of New Jersey and Pennsylvania, would respectfully represent to your honorable body the inutility of the Department of Agriculture as a national institution.

Therefore, in consideration of the following reasons, as set forth by your petitioners, we would most earnestly request that action may be taken at an early day whereby that institution may be discontinued.

It has already cost the Government more than three millions of dollars, and without accomplishing any benefit whatever.

Its locality is not in any way suited for the propagation of such tropical plants and seeds, from whence are derived the greater portion of our imported productions of the soil.

It is contrary to the laws of nature for the climate of the District of Columbia to reproduce tropical or semi-tropical plants, &c.

Furthermore, to cultivate or experiment on such plants, in the green-house, is not only expensive but impracticable, and never can be of any commercial value to the nation. Hence the inutility of the Department of Agriculture.

Rare seeds and practical works on agriculture (in all its bearings) are obtainable at most of the reliable seed stores.

By a speedy and due consideration of the foregoing, your memorialists will ever pray, &c.

The following names of men and boys of Camden (New Jersey) and vicinity are

appended: Chas. S. Ayres, M. West, George Channell, Alex. Wood, Jos. E. Ballinger, C. P. Shivers, U. W. Condit, Henry C. Garrison, Chas. D. Lippincott, John F. Musgrave, James Cheatham, W. C. Cluly, Geo. F. Turner, Wm. T. McDanel, Thomas McDonald, Robt. W. Dickson, Henry E. Robertson, John M. Fine, Edward I. Gigham, J. Ashbrook, jr., Ezekiel Pullen, Reuben W. Clark, D. R. Clark.

This memorial was referred to the Committee on Retrenchment, the chairman of which, on the part of the House, Hon. Martin Welker, of Ohio, in reporting adversely to the prayer of the petitioners, took occasion to remark as follows relative to the functions, uses, and expenditures of this Department:

MR. SPEAKER: At the last session of Congress a memorial signed by citizens of New Jersey and Pennsylvania, asking the abolition of the Agricultural Department, was referred to the Joint Committee on Retrenchment, of the House part of which I have the honor to be chairman. Supposing the committee will have no opportunity to report upon the memorial at this session, I take this occasion to make some remarks against the prayer of the memorialists.

Desirous as I am to retrench the expenses of the Government in every possible way, fully recognizing the fact that the heavy burdens of the people demand relief from taxation wherever it can be accomplished, yet I believe this Department, in view of the public good, cannot be dispensed with, and that it would not be wise economy to abolish it. I regard it as a very important branch of the public service and entitled to the liberal support of the Government.

Much of the legislation of Congress has been in the interest of manufactures, finance, and general commerce. Immense Government machinery in the different departments is brought to bear upon these great interests. Until the establishment of the Agricultural Department, the farming and producing interests were almost entirely neglected, or allowed to take care of themselves as best they could under the care of the States. Agriculture is a national interest. The importance of this branch of industry, the great interests to develop, the wide field for improvement, demand the fostering care of the General Government. Our people are an agricultural people. With the most productive lands, every variety of soil and climate, growing the products of almost every land, we have the capacity to develop the greatest agricultural resources of any country of the globe.

This Department is organized in the interest of labor. This interest, as well as capital, must be taken care of by the Government. There is no need of any conflict in this country between labor and capital. They are coworkers; the one cannot dispense with the other, and both must be fostered. Capital is, however, more able to take care of itself than labor. In the old countries of Europe capital is supreme and labor subordinate. Not so in this country. Here it is reversed, and labor is the great foundation of our national prosperity and advancement.

The Department of Agriculture has been established but a short time. It may be considered an off-shoot of the Patent Office. It had its beginning there. Prior to 1838 some attention had been given to agricultural interests in connection with inventions of labor-saving and valuable machinery. In that year Mr. Ellsworth, then Commissioner of Patents, impressed with the importance of the subject, suggested that Government should recognize the claims of agriculture, and give a more definite character and encouragement to the measures he had commenced, on a limited scale, toward collecting statistics, and introducing a few new seeds and plants, and particularly new varieties of wheat. The next year Congress appropriated \$1,000 from the patent fund for this purpose; and with it a few new plants were introduced, and about thirty thousand packages of seed distributed.

These suggestions of the Commissioner induced Congress to make small annual appropriations for several years, and led to the adoption of schedules for the collection of statistics in agriculture, which were used for the first time in the census of 1840, and have been carried out more fully at each census since with increased satisfaction. The Department was organized by act of Congress, May 15, 1862. Its purpose was stated in the law to be "for acquiring and diffusing among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants."

In order fully to understand and appreciate the importance of the Department, and its practical and beneficial workings, allow me to call attention to its present organization, and describe the scope and purpose of each of its divisions. From this some correct idea can be formed of the great advantages the country will derive from its fostering care by legislation of the General Government. As now organized, it comprises several divisions:

1. DIVISION OF STATISTICS.

This is the office of publication, whence are issued the annual reports of the Department of nearly a quarter of a million copies and a monthly report of twenty-five thousand copies, embracing official data from thousands of correspondents located in nearly every county in the Union, regarding the modes of cultivation and prospects of crops. These reports, annual as well as monthly, are the most popular and most desired of any of the public documents printed by the Government. They are sought for and distributed by the foreign legations resident in this country to all the European Governments. A much larger number of the annual report should be printed for circulation among our people, as now half the demand for them cannot be supplied by members of Congress or the Department.

2. DIVISION OF AGRICULTURAL CHEMISTRY.

1. This division affords a medium of correspondence and information between the various agricultural societies and farmers; answering queries on samples forwarded, as ores, minerals, waters; making chemical examinations of natural products and fertilizers, as marls, peats, &c., and giving advice upon the same. Many hundreds of letters are answered every year on these subjects.

2. It is a means through which any new vegetable products, valuable through their chemical constitution, may be examined and brought before public notice as worthy of growth in the States.

3. It is a means whereby large and useful manufactures not existing in this country may be brought under the notice of farmers. In this way the growth of the beet for sugar has been recommended, and is becoming adopted. Comparatively few experiments in its growth had been tried before the Department entered on the consideration of the subject.

4. By its means chemical examinations of the value and composition of vegetable products grown for food in the United States may be conducted on that scale which, embracing the area of the whole country, will lead to more valuable and truthful results than those undertaken by a single State or institution not possessing the extensive communication and correspondence which the Department has. Of this nature is the determination of the nutritive value of cereals grown in the several States, which has just been commenced, and which no doubt will yield valuable results.

3. DIVISION OF BOTANY.

The purpose of this division is to give a scientific basis, derived from an accurate knowledge of the ascertained laws of vegetable growth, on which alone any successful system of progressive agriculture can be founded. This is being accomplished in this division by bringing together as far as possible all the varied forms of plants, either in a living state or in the preserved form of herbarium specimens. These are so arranged that any particular plant or class of plants can be readily found, and the relation to allied plants, whether as to uses or capacity for cultivation, can be ascertained with the least labor. By this arrangement, in connection with works of reference giving full accounts of habit, mode of growth, native location, geographical distribution, changes by cultivation, and uses either for food, medicine, or in the arts, there will be accumulated a fund of reliable information, exceedingly valuable in directing culture or indicating sources of supplies of desired materials in medicine or the arts. It is intended by this division to secure the active coöperation of all working botanists in this country and abroad, by a proper system of correspondence and exchange, and thus to furnish valuable information on the progress of botanical research in its direct relation to horticulture and agriculture.

4. DIVISION OF NATURAL HISTORY.

The principal feature of this division is the museum of natural history. This is an economic collection, exhibiting the process of manufacture of the raw products of agricultural industry, in which the textile arts, the making of sugars and dyes, and the utilization and extension of the primitive products of the earth are illustrated; also illustrations of the various transformations of insects, both favorable and inimical to vegetation. In this museum are models of the various fruits and specimens of grain, &c., of this country. They are intended to represent type specimens of such varieties, and to show which kinds are particularly adapted to any particular region, climate, or soil. It is intended to represent each State by sections of cases, containing the different varieties of fruits, grains, &c., that have been recommended by State boards of agriculture as especially adapted for culture in their particular States, thus saving years of labor and probable loss to the new settler by exhibiting at one view those varieties which have been experimented upon and found to succeed the best. Duplicate collec-

tions can thus be obtained by each State desiring the specimens for agricultural colleges or State cabinets.

In the collection of native birds the specimens are labeled to show at a glance which are the friends of the farmer by destroying injurious insects, or which are the enemies that prey upon his crops. The plates of insects are especially designed to show such insects as are destructive to vegetation, so that the farmer or fruit grower may recognize them at a glance. Then, by referring to a manuscript work by Professor Glover, the entomologist of the Department, he can immediately learn all that is known of their habits, and the best means to exterminate them. All inquiries relative to noxious insects of the farm made by agriculturists or others desiring such information can be readily answered and the best known remedies recommended.

In the cases devoted to the animal and vegetable fibers they are shown in all their stages, from the seed to the manufactured articles, or from the raw material, as in the case of wool, to the various fabrics made from it.

The collection of domestic poultry shows type specimens of such as are recommended as best for market, laying eggs, or for any particular purpose. The design of the economic collection of flours manufactured from cereals, dye-stuffs, gums, oils, &c., is to show what can be made from various native materials, or to suggest the various products imported from abroad that should be grown in this country.

5. DIVISION OF HORTICULTURE.

This consists of an experimental garden with the *arboretum*, and is devoted to the introduction of new and valuable and promising plants, shrubs, and trees, native and foreign, suitable to the various sections of the Union. What is known as the Botanical Garden has no connection with this division or the Department.

WHAT IT HAS ACCOMPLISHED.

Now, Mr. Speaker, what has the Department accomplished? Since the claims of agriculture have been recognized and fostered by Government, the excellence and variety of its machinery and implements have surpassed those of all other nations.

In 1847 the number of agricultural patents granted was but 47; in 1863 it had increased to 390; in 1865 to 642; in 1866 to 1,778; and for each of the last two years it has reached nearly 2,000. These improvements are rapidly revolutionizing the agriculture of the West, and reducing to the lowest point ever attained the proportion of manual labor employed in the operations of farming, saving at least fifty per cent. of the manual labor required in agricultural pursuits.

Under its present able head the Department has distributed the last year nearly six hundred thousand packages of seed, including upward of thirty thousand sacks of winter wheat imported by the Commissioner, besides new varieties of oats and other cereals, which have been sent into every congressional district in the Union; thus affording at once a more general diffusion of new and valuable kinds of grain than would or could be done by private enterprise in many years. As the result of this distribution of seed by the Department from year to year, there are now raised hundreds of thousands of bushels of oats, incomparably superior to the old varieties, and in many instances nearly doubling the crop. And so of the increased quantity and superior quality of the wheat in many of the States. The same might be said of several of our other products. This increase has contributed millions to the wealth of the country, and alone establishes the utility and great benefits resulting from this Department.

It is said that he who makes two blades of grass grow where one did before is a public benefactor. This Department has done this, and more, in many varieties of agricultural products. It has established relations with organized associations for agricultural improvements, whether governmental or otherwise, making exchanges of seeds, plants, and publications. Through an extended correspondence with foreign societies and our consuls abroad it is searching the world for new and valuable plants to acclimatize, new varieties of cereals to test, and, when found valuable, to distribute, thus finding and introducing into our agriculture the valuable products of all countries suitable and profitable for our cultivation.)

Agriculture is the great civilizer of the world. Its improvements and advancements mark national as well as individual progress. Whatever will add to its success, furnish it with valuable inventions and discoveries, are so many steps toward accomplishing the highest forms of civilization and human happiness. In this country, with its broad and fertile acres, the cultivator of the soil is generally its owner. So large a proportion of our population being engaged in this pursuit it must ever be a leading occupation. The great extent of our country and its capabilities make it necessary that there shall always be a great diversity of agricultural labor. To give direction to this diversified agriculture is one great purpose of the Department, and it will be able to lead the way in processes of culture, as well as selection of products and their varieties, in the different localities, and thus enabling farmers to give attention to that culture which promises and secures the best results and rewards.

Another thing: Agricultural colleges, under the liberal land grants of Congress, are being established in different States, under State control. This Department, as a common head, can and will furnish great assistance in the farm education proposed in these colleges.

Like the Bureau of Education, but recently established to concentrate statistics and lead and give information and direction to educational interests in the States, this Department will be able to give the same, and perhaps much greater, facilities in the direction of agricultural education among the people.

PUBLIC LANDS.

Intimately connected with this subject is the land policy of the Government, about which I desire to make a few additional remarks. In the early days of the Republic our public lands were regarded as a source of revenue. It was expected from their sale to pay a large proportion of the expenses of the Government; but in later days it was found that, with expense of survey and sale, these expectations were not realized, and a new policy was adopted, and large quantities of the public domain have been used in constructing railroads, endowing colleges, rewarding military services, and stimulating immigration by giving homesteads to all persons who will live on and improve them.

In this way this heritage of the people has largely contributed to the material development of our country. These grants have not always been wisely made, and in many respects have no doubt been great outrages upon the rights of the people. The future policy of the Government should be to so provide by legislation that our public lands should be preserved for actual settlers, and thereby furnish free homes to the landless. Concentration of large quantities in the hands of monopolists and speculators is the great curse of most of the Western States, and has and does impede agricultural improvement and development.

Of our public lands about seventy-eight million acres have been granted for schools and colleges, over ten millions of which have been given to agricultural colleges. Two hundred million acres have been appropriated and given to build railroads and other improvements. About seventy-three million acres have been given to our soldiers, their widows and children. The Government still owns about a thousand million acres. This vast domain as fast as it is surveyed is open to settlement under our homestead laws, which give every man or unmarried woman one hundred and sixty acres for the cost of survey and entry, upon living upon and improving the same for the time limited, which is five years, except a soldier, who, under the bill passed by the House, is allowed to count three years of his term of service in the Army, or whatever term under that period he has served, as part of the five years' residence.

In the year 1869, about two and a half million acres were given to homestead and preëmption settlers. In the same year about eight million acres were converted from wild lands into farms, making some sixty thousand farms. We now have over six million real-estate owners, being one in about every six of our population, and nearly one-half of our whole population are engaged in the pursuit of agriculture.

The whole landed property of England is now owned by thirty thousand persons, making one in every six hundred and fifty of its population. One-half of its soil is now owned by about one hundred and fifty persons. Nineteen and a half million acres in Scotland are owned by twelve proprietors. In this country this extensive ownership of the soil, the sense of proprietorship resulting therefrom, encouraging independence of action and thought, constitute the corner-stone of our Republic. The multiplication of these free homes for the people, instilling into their minds the spirit of agriculture and mechanical progress, and education, and moral development, and improvement, will secure freedom, equality, and prosperity among our people, and perpetuity to our Government.

In this grand work, with such support as should be and no doubt will be given to it, the Agricultural Department, in the future as in the past, will be an efficient and important aid to the other branches of the Government. The memorial to which I have alluded alleges that over three million dollars have already been expended upon the Department without any corresponding benefits. Having stated its great benefits in the past, and what it is expected to accomplish in the future, I append to these remarks a statement showing the several appropriations for each year from 1839, the first one made, to and including 1870:

1839, (first appropriation for the promotion of agriculture, from Patent Office fund)	\$1, 000
1842, (from Patent Office fund)	1, 000
1843, (from Patent Office fund)	2, 000
1844, (from Patent Office fund)	2, 000
1845, (from Patent Office fund)	3, 000
1846, (from Patent Office fund)	
1847, (from Patent Office fund)	3, 000

1848, (from Patent Office fund).....	\$3, 500
1849, (from Patent Office fund).....	3, 500
1850, (from Patent Office fund).....	4, 500
1851, (from Patent Office fund).....	5, 500
1852, (from Patent Office fund).....	5, 000
1853, (from Patent Office fund).....	5, 000
Total from Patent Office fund, (reimbursed in 1855)	39, 000
1854	35, 000
1855	25, 000
1856	105, 000
1857	60, 000
1858	60, 000
1859	40, 000
1860	60, 000
1861	60, 000
1862	60, 000
1863, (including \$20,000 to test the practicability of cultivating and pre- paring flax and hemp as a substitute for cotton).....	135, 000
1864	151, 370
1865	155, 300
1866	149, 100
1867	179, 020
1867, (transferred from the Bureau of Freedmen, Refugees and Abandoned Lands, for seeds for Southern States)	50, 000
1868	120, 068
1868, (to pay claims against the Department contracted prior to June 1, 1867)	40, 000
1869	141, 440
1870	145, 370
Total	<u>1, 810, 668</u>

For permanent improvements, including the erection of the new building, furnishing, finishing, &c.

1867, (for the erection of the new Department building).....	\$100, 000
1868, (for heating, water, and gas apparatus, furniture, cases for museum, library, apparatus for laboratory, &c.).....	52, 525
1870, (for new conservatory).....	25, 000
For improvement of agricultural grounds.....	16, 700
Total	<u>194, 225</u>

AGRICULTURE AND CLIMATE OF OREGON.

The secretary of the Oregon State Agricultural Society sends to the Department, under date of January 18, 1871, a lengthy report, from which we cull the following items of information relative to the agriculture, climate, and growth of that State:

The early portion of the season of 1870 was very promising for farmers, but heavy rains in the latter part of June, succeeded by extraordinarily hot days and nights, arrested the filling of grain. The wheat harvest was scarcely an average yield; the oats crop was one-fifth below the average; late potatoes did not yield three-fourths of an average crop. Early potatoes, however, did better, and there was a heavy crop of hay, perhaps one-half above the average. Rust, unusual in the history of the State, affected the growing grain. One farmer had a field of oats entirely destroyed by the red rust, so common in the Eastern States, but heretofore unknown in Oregon. Our correspondent believes that the damage to the growing crops was caused more by the warm nights of July than by any other cause. Usually an Oregon summer day is succeeded by a cool night, but in the season referred to warm nights succeeded the warm days. To the same influence is ascribed the prevalence during the year of ague and other miasmatic diseases. He had not known up to 1870 of a single case of ague during an experience of twenty-six years in that State.

Notwithstanding the drawbacks of 1870, the general condition and prospects of the

Oregon farmer are encouraging. The price of wheat has advanced, and the means of moving heavy products to market have improved. Wheat was selling in January at \$1 a bushel. The export trade of Oregon, consisting mainly of agricultural productions, is steadily growing. During the sixteen months ending October 31, 1870, there were exported to foreign countries, chiefly to British Columbia, flour, grain, provisions, salmon, lumber, &c., amounting in value to \$371,355. A large trade also exists with the Territories north and east of Oregon. The shipments to California largely exceed all other shipments combined. Her people take breadstuffs, oats, butter, eggs, and other provisions, wool, lumber, coal, and fruit, and, together with Washington, Idaho, Montana, and Nevada Territories, and British Columbia, all the live stock Oregon can spare, and more than she ought to spare. For Oregon horses California is the principal market.

The indications in January were that all kinds of stock were passing through the winter in good condition, except in the Umpqua and Rogue River Valleys, where there was a scarcity of grass last summer and autumn, in consequence of prolonged drought. Winter wheat presented a favorable appearance. Owing to the open winter, preparations for spring planting were further advanced than usual.

Of several varieties of wheat received from the Department and tested upon his own farm, our correspondent expresses a preference for the white variety, known as Oregon white winter wheat. The crop of winter wheat which received the first premium awarded by the Oregon State Agricultural Society at its fair for 1870 was of this variety. It was raised by Mr. T. W. Davenport, of Marion County, and yielded 912 bushels, weighing 63 pounds to the measured bushel, from 20 acres—more than 45½ bushels to the acre. Premiums for spring wheat were awarded to Calvin Neal, who raised 31 bushels of Russian or ninety-days wheat to the acre; and to James Finlayson, who raised 33 bushels of White Chili to the acre.

Two extraordinary crops of oats are reported. Joseph Hamilton raised on ten acres of bottom land, without manure, 820 bushels of winter oats. The land had been under cultivation for twenty-two years. J. H. Robbins raised on two and a half acres of red hill land 250 bushels of Russian oats.

The following weather record for 1870 was kept by Mr. T. Pearce, of Eola, in latitude 44° 51', and longitude 123° 5':

Months.	Maximum temperature each month.	Minimum temperature.	Mean temperature.	Number of rainy days.	Rain-fall in inches.	Clear days.	Cloudy days.	Foggy days.	Partially foggy.
January	43	20	37	17	4.35	9	2	3	2
February	47	33	39	15	5.62	4	8	0	4
March	47	24	39	16	5.77	9	6	0	2
April	60	38	47	12	5.52	11	7		
May	66	44	52	10	2.46	9	12		
June	68	47	59	7	2.26	14	8		
July	81	52	71			27	4		
August	83	57	68	2	0.08	24	5		
September	73	54	59	3	0.71	16	10	1	6
October	59	39	46	3	0.90	27	1		7
November	48	36	42	11	5.05	8	10	2	6
December	50	20	33	9	4.38	12	5	3	2
				105	37.31	170	78	9	29

IMPORTS OF 1870.

The following is from the official statement of quantities and values of imports for the year ending December 31, 1870, in comparison with a similar statement of the imports of 1869.

	Quantities.		Value.	
	1870.	1869.	1870.	1869.
Articles in a crude state used in dyeing and tanning.....			\$406, 101	\$511, 021
Barilla and kelp.....lbs.		1, 396, 833		12, 956
Cochineal.....do.	1, 446, 072	1, 404, 158	1, 026, 945	927, 946
Cotton, raw.....do.	1, 928, 309	1, 348, 331	331, 185	339, 384
Dyewoods, in sticks.....cwt.	974, 591	1, 853, 288	635, 666	1, 699, 384
Gold and silver:				
Gold bullion.....			833, 629	751, 821
Silver bullion.....			127, 928	97, 829
Gold coin.....			9, 596, 872	15, 829, 763
Silver coin.....			15, 014, 874	8, 289, 114
Guano, except from American islands.....tons.	90, 875	14, 914	2, 888, 413	295, 721
Gypsum, or plaster of Paris, unground....do.	94, 635	139, 124	83, 708	130, 432
Madder:				
Ground or prepared.....lbs.	5, 435, 985	20, 935, 291	614, 511	2, 543, 734
Root.....do.	56, 012	355, 045	7, 008	46, 237
Rags of cotton and linen for manufacture of paper.....lbs.	89, 282, 250	83, 795, 662	3, 254, 035	3, 154, 552
Silk, raw, or as reeled from the cocoon....do.	738, 381	614, 625	3, 897, 875	3, 079, 409
Wood, all cabinet, unmanufactured.....			717, 045	661, 227
Animals, living, of all kinds.....			7, 303, 294	4, 124, 360
Breadstuffs:				
Barley.....bush.	5, 605, 291	6, 594, 665	4, 030, 567	5, 324, 972
Bread and biscuit.....lbs.	1, 109, 347	706, 351	129, 996	49, 043
Indian corn.....bush.	89, 897	87, 002	77, 391	72, 959
Indian meal.....bbls.	121	288	473	901
Oats.....bush.	2, 259, 036	555, 702	733, 949	205, 678
Rice.....lbs.	46, 065, 129	46, 112, 450	1, 223, 120	1, 079, 760
Rye.....bush.	320, 964	268, 976	202, 388	175, 781
Rye flour.....bbls.	3	224	19	773
Wheat.....bush.	1, 048, 205	640, 663	1, 168, 177	684, 552
Wheat flour.....bbls.	75, 321	88, 114	333, 086	400, 370
Potatoes.....bush.	156, 679	105, 758	77, 344	64, 113
All other preparations from breadstuffs, used as food.....			346, 214	448, 058
Books, pamphlets, maps, engravings, and other publications.....			1, 758, 589	1, 746, 728
Chicory, ground or prepared, and root....lbs.	1, 928, 083	3, 821, 469	58, 826	124, 833
Clothing, except when of silk:				
Cut and sewed together.....			1, 721, 836	1, 020, 276
Articles of wear not specified.....			1, 045, 636	865, 988
Coal, bituminous.....tons.	456, 959	423, 659	1, 156, 854	1, 160, 364
Cocoa.....lbs.	5, 105, 244	2, 483, 960	602, 842	234, 847
Coffee.....do.	275, 242, 736	243, 925, 725	27, 615, 262	23, 834, 854
Copper:				
Ore.....cwt.	59, 765	140, 463	48, 868	518, 383
Copper.....lbs.	304, 276	323, 721	32, 299	39, 652
Manufactures of.....			562, 762	280, 696
Cotton, and manufactures of:				
Bleached and unbleached.....sq. yds.	30, 708, 032	27, 761, 136	3, 972, 678	3, 633, 063
Printed, painted, or colored.....do.	30, 871, 080	24, 428, 970	3, 945, 419	3, 386, 797
Hosiery, shirts, and drawers.....			4, 627, 227	4, 655, 154
Jeans, denims, drillings, &c.....sq. yds.	5, 561, 214	7, 186, 143	796, 107	1, 024, 581
Manufactures not specified.....			12, 568, 930	9, 506, 419
Chemicals, drugs, medicines, and dyes not specified.....			6, 618, 554	7, 421, 857
Earthen, stone, and China ware.....			4, 251, 375	4, 688, 573
Fancy goods.....			4, 244, 541	3, 600, 267
Fish, fresh and cured, not of American fisheries.....			2, 724, 213	2, 276, 159
Flax and manufactures of:				
Flax, raw.....tons.	2, 557	1, 954	599, 670	642, 498
By yard.....			12, 335, 697	14, 079, 307
Other manufactures.....			4, 455, 671	2, 976, 752
Fruit of all kinds, (including nuts).....			7, 338, 492	8, 047, 893
Furs and fur skins.....			2, 367, 372	2, 865, 696
Glass and glasswares:				
Cylinder, crown, or common window....lbs.	33, 090, 388	36, 591, 177	1, 380, 237	1, 539, 849
Cylinder and crown, polished.....sq. ft.	58, 464	53, 852	16, 754	18, 481
Fluted, rolled, or rough plate.....do.	479, 328	215, 261	25, 264	27, 442
Cast polished plate, not silvered.....do.	1, 580, 112	1, 246, 821	885, 034	684, 688
Cast polished plate, silvered.....do.	2, 492, 721	2, 334, 388	644, 334	610, 817
Manufactures not specified.....			1, 059, 084	1, 223, 135
Gums.....	8, 200, 359	9, 540, 392	1, 249, 826	1, 331, 687

Official statement of quantities and values of imports, &c.—Continued.

	Quantities.		Value.	
	1870.	1869.	1870.	1869.
Hemp and manufactures of:				
Raw.....tons..	20,239	19,057	\$4,031,874	\$3,103,008
Manufactures by yards.....sq. yds..	1,011,275	907,029	144,217	142,928
Other manufactures of.....			311,212	227,716
Hides and skins, other than furs.....			14,528,988	14,204,009
India-rubber and gutta-percha:				
Unmanufactured.....lbs..	9,266,790	9,972,706	3,485,866	3,235,184
Manufactured.....			913,768	792,868
Iron and steel, and manufactures of:				
Pig iron.....lbs..	314,630,384	350,269,170	2,401,993	2,484,173
Castings.....do..	4,324,095	1,201,906	32,006	27,767
Bar iron.....do..	174,578,066	186,119,940	3,416,718	3,664,445
Boiler iron.....do..	2,003,134	1,157,401	48,836	33,148
Band, hoop and scroll iron.....do..	14,651,896	15,557,761	308,335	315,522
Railroad bars or rails.....lbs..	798,306,761	626,326,597	13,322,170	9,092,342
Sheet iron.....do..	22,536,563	27,395,521	662,210	1,098,000
Old and scrap iron.....tons..	150,194	149,391	3,471,590	3,025,131
Hardware.....			164,118	293,605
Anchor, cables, & chains of all kinds.lbs..	10,335,618	12,719,656	431,272	489,375
Machinery.....			909,141	1,036,208
Muskets, pistols, rifles, and sporting guns.....			805,359	472,205
Steel ingots, bars, sheets, and wires.....			3,310,686	2,769,140
Cutlery.....			1,755,499	1,731,132
Files.....			559,248	607,267
Saws and tools.....			220,733	155,077
Manufactures of iron and steel not specified.....			5,601,316	5,496,350
Jute and other grasses, and cocoa fiber, and manufactures of:				
Raw.....tons..	25,849	19,614	2,143,714	1,243,586
Manufactures of, by yards.....yds..	3,348,119	1,594,568	347,394	113,367
Gunny cloth, gunny bags, and other manufactures of, used for bagging.....lbs..	22,172,265	10,146,679	1,060,621	300,058
Other manufactures.....			1,164,343	1,233,527
Lead and manufactures of:				
Pig, bars, and old.....lbs..	84,955,916	91,829,077	3,485,703	3,759,602
Manufactures of.....			13,391	35,132
Leather and leather goods:				
Leather of all kinds.....lbs..	9,931,135	7,834,872	5,938,598	5,265,392
Gloves of kid and cheveril.....doz. prs..	446,684	345,725	2,964,150	2,354,976
All other gloves of skin or leather.....do..	138,226	114,837	586,631	463,268
All other manufactures of.....			760,103	690,039
Oils:				
Whale and fish, not of American fisheries.....galls..	395,011	834,143	220,582	520,573
Olive, salad.....galls..	154,489	157,126	291,455	342,123
Not salad.....galls..	69,469	329,439	59,509	278,640
All other fixed oils.....galls..	6,595,046	4,006,455	1,768,374	1,207,933
Volatile or essential.....lbs..	253,746	278,928	389,512	420,613
Opium, and extract of.....lbs..	272,401	177,445	1,857,185	1,294,299
Paper, and manufactures of:				
Printing paper.....			77,206	75,352
Writing paper.....			34,882	198,808
Other paper.....			505,292	236,201
Papier-maché and all other manufactures of paper, and including parchment.....			610,192	555,567
Perfumery and cosmetics.....			284,044	272,764
Precious stones.....			1,909,305	2,079,213
Provisions, including peas, beans, and vegetables.....			4,421,163	3,107,531
Salt.....lbs..	605,596,772	733,634,412	1,202,809	1,416,488
Saltpeter, (nitrate of potash).....lbs..	12,366,480	7,625,575	503,371	294,557
Silk, manufactures of:				
Dress and piece goods.....			14,902,727	11,923,359
Hosiery, shirts, and drawers.....			38,561	38,047
Manufactures not specified.....			12,182,079	11,271,709
Soda, and salts of:				
Bicarbonate.....lbs..	15,608,413	14,003,068	326,470	353,238
Carbonate, including sal-soda and soda ash.....lbs..	154,343,498	152,266,721	2,299,880	2,493,616
Caustic soda.....lbs..	26,098,533	18,158,595	805,200	552,769
Nitrate, acetate, sulphate, phosphate, and all other salts of soda.....lbs..	33,683,085	32,058,338	884,247	737,292
Spices of all kinds, including ginger, pepper, and mustard.....lbs..	20,571,942	18,172,580	1,857,007	1,514,408
Sugar and molasses:				
Brown.....lbs..	1,115,348,643	1,258,569,350	52,995,434	62,497,271

Official statement of quantities and values of imports, &c.—Continued.

	Quantities.		Value.	
	1870.	1869.	1870.	1869.
Sugar and molasses :				
Refined .....lbs..	259,947	1,028,971	\$13,365	\$70,045
Molasses .....galls.	50,058,182	53,958,904	11,487,910	12,351,211
Melada and sirup of sugar-cane.....lbs.	38,083,038	21,065,819	1,315,840	726,071
Candy and confectionery.....do..	56,556	48,694	13,629	13,974
Tea.....do..	49,359,803	46,999,296	15,053,465	14,056,678
Tin, and manufactures of:				
In bars, blocks, or pigs.....cwt..	100,709	78,026	2,669,456	1,993,981
In plates.....do..	1,419,354	1,591,346	8,405,377	8,703,417
Manufactures of.....do..			66,903	42,857
Tobacco, and manufactures of:				
Leaf.....lbs..	7,180,500	5,849,733	2,849,093	2,259,492
Cigars.....do..	668,533	475,045	2,108,022	1,471,819
Snuff.....do..	17,255	18,668	5,284	6,251
Other manufactures of.....do..			31,025	14,252
Watches, and watch movements and materials.....do..			3,194,828	2,693,404
Wines, spirits, and cordials:				
Spirits and cordials in casks....pf. galls..	1,387,173	1,812,642	1,670,129	1,573,436
Spirits and cordials in bottles.....doz.	56,654	32,934	266,290	155,340
Wine in casks.....galls.	9,495,984	8,659,556	3,306,179	3,134,804
Wine in bottles.....doz.	577,572	394,808	2,598,924	2,466,620
Wool, sheep's; goats' and camels' hair, and manufactures of:				
Raw and fleece.....lbs..	50,230,518	49,629,419	7,278,745	7,170,495
Cloths and cassimeres.....do..			9,543,911	7,688,348
Woolen rags, shoddy, mungo, waste, and flocks.....lbs..	703,026	795,652	65,864	69,317
Shawls.....do..			2,035,502	1,942,793
Blankets.....do..			17,481	22,854
Carpets.....yds..	3,974,548	3,887,730	4,041,971	4,261,258
Dress goods.....do..	67,490,126	63,278,264	16,552,393	15,463,942
Hosiery, shirts, and drawers.....do..			506,209	466,368
Manufactures not elsewhere specified.....do..			5,479,122	4,938,730

The commodities named are the principal but not the only ones reported. The total aggregate of imports of 1869 is \$463,424,421; of 1870, \$486,695,673. The portion brought in American vessels in 1869 was \$146,343,209; in 1870, \$154,912,888—a little less than one-third.

MARKET PRICES OF FARM PRODUCTS.

Articles.	March.	April.
NEW YORK.		
Flour, State.....per barrel..	\$6 00 to \$7 35	\$6 00 to \$7 10
western.....do.....	6 00 to 8 75	6 00 to 9 00
Wheat, No. 1 spring.....per bushel..	1 56	1 56 to 1 61
No. 2 spring.....do.....	1 45	1 45 to 1 53
winter and amber western.....do.....	1 61 to 1 64	1 54 to 1 68
Corn, new western mixed.....do.....	84 to 85	83 to 83½
old western mixed.....do.....	85½ to 86½	83½ to 84
Rye.....do.....	1 12½	1 12½
Barley.....do.....	1 05 to 1 18	95
Oats, western mixed.....do.....	66 to 70	67¼ to 71
State.....do.....		
Hay, shipping qualities.....per ton.....	24 00	24 00
prime.....do.....	25 00 to 30 00	25 00 to 30 00
Pork, mess.....per barrel..	21 50 to 22 75	21 25
prime mess.....do.....	19 00 to 22 00	18 00 to 20 00
Beef, mess.....do.....	10 00 to 15 00	10 00 to 15 00
extra.....do.....	15 00 to 17 50	15 00 to 17 50
Lard.....per pound..	12½ to 13½	11½ to 11½
Butter, western.....do.....	15 to 25	12 to 20
State.....do.....	30 to 48	20 to 45
Cheese, dairy.....do.....	7 to 14	7 to 14
factory.....do.....	13 to 16½	12 to 16½
Cotton, ordinary.....do.....	12½ to 14	10½ to 13½
middling.....do.....	14½ to 17½	14 to 17½
Tobacco, sound lugs, light grades.....do.....	6¼ to 7¼	6 to 6¾
sound lugs, heavy grades.....do.....	7½ to 8½	7 to 7½
common leaf, light grades.....do.....	7½ to 8¼	7 to 7¾
common leaf, heavy grades.....do.....	8½ to 09	7¾ to 8½
Wool, combing fleece.....do.....	42½ to 50	50 to 58
extra pulled.....do.....	47½ to 50	44½ to 51
Texas, common to medium.....do.....	24 to 30	34
California, common.....do.....	23 to 36	25
BOSTON.		
Flour, western superfine.....per barrel..		6 25 to 6 50
western extra.....do.....		6 75 to 8 00
western choice.....do.....		8 50 to 10 50
Wheat.....per bushel..		
Corn, yellow.....do.....		87 to 88
mixed.....do.....		84 to 86
Oats.....do.....		68 to 73
Rye.....do.....		1 10 to 1 20
Barley.....do.....		95 to 1 20
Pork, mess.....per barrel..		20 50 to 21 00
prime.....do.....		17 50 to 18 00
Beef, mess.....do.....		12 00 to 16 00
extra mess.....do.....		16 00 to 18 00
Lard.....per pound..		12½ to 13
Butter, New York and Vermont.....do.....		25 to 40
Canada.....do.....		18 to 25
western.....do.....		12 to 20
Cheese, eastern factory.....do.....		6 to 16
Ohio factory.....do.....		13 to 15½
Hay, prime.....per ton.....		20 00 to 29 00
Wool, western.....per pound..		48½ to 57½
combing and de laine fleeces.....do.....		55 to 56½
tub.....do.....		56 to 97½
pulled.....do.....		50 to 57

Articles.	March.	April.
CHICAGO.		
Flour, winter, extras .....per barrel..	\$6 50 to \$3 25	\$7 75
spring .....do.....	4 00 to 7 37½	\$4 75 to 6 25
Wheat, No. 1 spring.....per bushel..	1 20 to 1 25½	1 27½ to 1 23
No. 2 spring .....do.....	1 19½ to 1 26½	1 27
No. 3 spring .....do.....	1 15 to 1 20	1 20½ to 1 22
Corn, No. 2 .....do.....	48½ to 51	51½ to 54½
rejected .....do.....	46 to 49½	53 to 53½
Oats, No. 2 .....do.....	48½ to 49¼	48 to 51
rejected .....do.....	47	47½ to 48
Hay, timothy and clover, (on track).....per ton..	15 00 to 16 00	15 00 to 16 00
prairie .....do.....	11 00 to 16 00	10 00 to 13 00
Pork, mess .....per barrel..	21 37½ to 21 50	20 00 to 20 50
prime mess .....do.....	16 50 to 17 00	16 00 to 19 00
Beef, mess .....do.....	10 00 to 11 50	11 00 to 13 00
extra mess .....do.....	13 00 to 13 50	14 50 to 15 00
Lard .....per pound..	15 to 15½	14½ to 15
Butter, firkin and tub.....do.....	13 to 25	8 to 22
extra .....do.....	25 to 28	25 to 23
Cheese, New York factory.....do.....	18 to 19	18 to 19
western factory .....do.....	15 to 16	15 to 16
western reserve .....do.....	15 to 16	15 to 16
Wool, medium fleece .....do.....	35 to 45	33 to 48
unwashed medium.....do.....	26 to 30	30 to 35
tub .....do.....	45 to 50	45 to 50
CINCINNATI.		
Flour, family .....per barrel..	\$6 50 to \$6 75	\$6 35 to \$6 50
extra .....do.....	6 25 to 6 50	6 25 to 6 35
superfine .....do.....	5 35 to 5 65	5 50 to 5 75
low grades .....do.....	4 50 to 5 00	5 00 to 5 40
Wheat, No. 1 white.....per bushel..	1 45	1 45 to 1 50
No. 2 white.....do.....	1 37 to 1 38	1 38 to 1 40
No. 1 red .....do.....	1 35	1 35 to 1 38
No. 2 red .....do.....	57	59
Corn, No. 1 .....do.....	56	57
new ear.....do.....	1 05	1 13 to 1 15
Rye, No. 1 .....do.....	1 00	1 10 to 1 12
No. 2 .....do.....	1 00	90 to 95
rejected .....do.....	80	54
Barley, No. 1 .....do.....	50 to 52	50 to 52
No. 1 State .....do.....	48 to 50	16 00 to 19 00
Oats, No. 1 mixed.....do.....	16 00 to 19 00	18 00 to 21 00
No. 2 mixed.....do.....	18 00 to 23 00	21 00
Hay, tight-pressed .....per ton..	21 25 to 22 00	11½ to 11¾
loose .....do.....	26 to 28	26 to 32
Pork, mess .....per barrel..	20 to 22	20 to 22
prime mess .....do.....	13½ to 14½	13 to 14
Lard, prime steam.....per pound..	14½ to 16	15 to 16½
Butter, choice Ohio.....do.....	9 to 13	9 to 12¼
fair to good.....do.....	13½ to 14¾	13 to 14½
Cheese, western reserve.....do.....	4 to 12	5½ to 8
factory .....do.....	7 to 15	7 to 10
Cotton, ordinary .....do.....	8 to 12	8 to 20
middling .....do.....	10 to 15	10 to 14
Tobacco, lugs, West Virginia .....do.....	48 to 50	48 to 50
lugs, Kentucky .....do.....	42 to 44	42 to 44
common to medium leaf, West Vir- ginia .....per pound..	30 to 36	30 to 36
common to medium leaf, Ky. do.....	36 to 38	36 to 38
Wool, tub-washed .....do.....		
fleece-washed.....do.....		
unwashed .....do.....		
pulled .....do.....		

Articles.	March.	April.
ST. LOUIS.		
Flour, superfine.....per barrel..	\$5 00 to \$5 75	\$5 00 to \$5 50
extras.....do.....	5 75 to 7 25	5 25
choice.....do.....	7 50 to 9 00	7 50 to 9 50
Wheat, spring.....per bushel.....	-----	1 20 to 1 33
winter No. 1.....do.....	1 65	-----
winter No. 2.....do.....	1 52½	1 55 to 1 58
winter No. 3.....do.....	1 40	1 37½ to 1 42
red.....do.....	1 55 to 1 57½	-----
Corn, mixed.....do.....	49 to 59	50 to 62
yellow.....do.....	58 to 59	51½ to 53½
Rye.....do.....	90 to 93	95 to 1 00
Barley, winter.....do.....	95 to 1 10	75 to 1 05
spring.....do.....	65 to 75	95 to 1 10
Oats, mixed.....do.....	48 to 54	50 to 54
white.....do.....	58 to 60	55 to 56½
Hay.....per ton.....	21 00	16 00 to 22 00
Pork, mess.....per barrel.....	21 75 to 22 00	20 00 to 20 50
Lard, tierce.....per pound.....	12	11¾ to 12
keg.....do.....	12	12¾ to 13
Butter, choice.....do.....	23 to 30	28 to 30
fair to medium.....do.....	12 to 23	15 to 22
Cheese, factory.....do.....	15 to 24	15½ to 23
Cotton, middling.....do.....	13½ to 14	13½ to 14
Tobacco, sound lug.....per cwt.....	3 75 to 6 00	3 80 to 6 00
common leaf.....do.....	5 50 to 7 50	6 25 to 7 50
medium leaf.....do.....	7 50 to 8 50	7 50 to 8 75
Wool, tub-washed.....per pound.....	42 to 51	42 to 45
fleece-washed.....do.....	32 to 43	37 to 43
combing.....do.....	38 to 40	38 to 40
pulled.....do.....	32 to 36	33 to 36
NEW ORLEANS.		
Flour, superfine.....per barrel.....	6 62½ to 6 75	6 75.....
extras, (according to grade).....do.....	7 00 to 9 00	6 87½ to 8 00
Corn, mixed.....per bushel.....	71	70
yellow.....do.....	71 to 72	70
white.....do.....	73 to 75	70 to 71
Oats, choice.....do.....	73	65 to 68
Hay, choice.....per ton.....	26 50 to 28 50	25 00 to 26 00
prime.....do.....	24 00 to 26 00	23 00 to 24 00
Pork, mess.....per barrel.....	23 50 to 24 25	21 00 to 23 00
Lard, tierce.....per pound.....	12½ to 13	12 to 12½
keg.....do.....	14 to 14½	13½ to 12¾
Butter, choice western.....do.....	25 to 28	25 to 28
choice northern.....do.....	40 to 43	43 to 44
common northern.....do.....	25 to 30	25 to 30
Cheese, choice factory.....do.....	15 to 15½	15 to 15½
western reserve.....do.....	13½	13 to 13½
Cotton, ordinary.....do.....	12½ to 12¾	8½ to 13½
low middling.....do.....	13½ to 13¾	-----
middling.....do.....	14½ to 14¾	14½ to 15½
Tobacco, lugs, light.....do.....	5½ to 7	5½ to 7
lugs, heavy.....do.....	-----	-----
low leaf, light.....do.....	7 to 7½	7 to 7½
low leaf, heavy.....do.....	-----	-----
medium leaf, light.....do.....	8 to 9	7½ to 8
medium leaf, heavy.....do.....	-----	-----

Articles.	March.	April.
SAN FRANCISCO.		
Flour, superfine.....per barrel..	\$5 50 to \$5 75	\$5 75 to \$7 25
extras.....do.....	6 00 to 7 00	.....
Wheat, State.....per cental..	2 35 to 2 40	2 45 to 2 50
Oregon.....do.....	2 35 to 2 40	2 45 to 2 50
Corn, white.....do.....	1 50	1 65 to 1 70
yellow.....do.....	1 50	1 65 to 1 70
Barley.....do.....	1 25 to 1 40	1 35 to 1 60
Oats.....do.....	1 50 to 1 70	1 60 to 1 75
Hay, State.....per ton..	13 00 to 15 50	12 00 to 14 50
Pork, mess.....per barrel..	.....	26 00
prime.....do.....	.....	21 00 to 22 00
Beef, mess.....do.....	.....	14 00 to 18 00
Lard, in barrels.....per pound..	13 to 15	14½ to 15½
domestic.....do.....	14 to 14½	14 to 14½
Butter, State.....do.....	27½ to 35	25 to 30
Oregon.....do.....	.....	.....
overland.....do.....	.....	.....
Cheese.....do.....	10 to 14	10 to 14
Wool, native.....do.....	20 to 23	18 to 27½
California.....do.....	20 to 23	18 to 27½
Oregon.....do.....	.....	.....

PRICES OF MIDDLING COTTON.

The following statement of the prices of middling cotton, at the first of each month of the past twenty years, prepared by the editor of the New York Shipping and Commercial List, will be found useful for reference:

YEARS.	QUOTATIONS.												Average of year.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
1871.....	15½	15½	15½	15½	.....	22½	20½	20	19½	16½	17	16½	21.02
1870.....	25½	25½	23½	22½	23½	22½	20½	34½	35	27½	26½	25½	29.60
1869.....	26½	29½	29½	28½	28½	29½	31	32	30½	26½	25½	25½	26.79
1868.....	16½	19½	23	28	32½	31	32	38½	30½	26½	25½	25½	26.94
1867.....	35	33	32	30½	27½	27½	28	28	26½	21½	19	16	26.94
1866.....	51½	48	44	40	34	38½	36	36	33	42	39	34	39.66
1865.....	120	83	83	45	45	46	44	48	43	44½	56	50	58.96
1864.....	81½	84½	76	71	63½	107	155	164	185	125	128	123	115.71
1863.....	68	88	89	77	66	52½	73	63½	66½	81	86½	80	74.96
1862.....	37	31	23	28	26	31½	38½	47	48	56	60	67½	41.13
1861.....	12½	13	12½	13½	14½	14½	15	16½	20½	22	22½	27½	17.06
1860.....	11½	12	12	11	12	12½	12½	12	12	11½	12½	11½	11.98
1859.....	12½	12½	13½	13	15½	11	11½	13	12½	12½	12½	11½	12.42
1858.....	9½	11	12½	12½	13½	12½	13	13½	13½	134	12½	12½	12.48
1857.....	13½	13½	14½	14½	14½	14	14½	15½	15½	154	12½	11½	14.09
1856.....	9½	9½	10½	10½	11½	11	11½	12	11½	12½	12½	12½	11.29
1855.....	8½	9½	9½	9½	10	11	11½	11½	11½	10½	9½	10	10.14
1854.....	10½	10½	10½	10½	9½	9½	9½	9½	9½	9½	9½	9½	9.57
1853.....	9½	10½	10½	10½	10½	11	11	11	11	11	10½	10½	10.60
1852.....	8½	8½	8½	8	8	10	9½	9½	10½	10½	10	9½	9.20
1851.....	12½	13	10½	11½	11	9½	9½	7½	8½	9½	8½	8½	9.98

ENGLISH SHORT-HORN CATTLE SALES.

Thornton's Circular for January, 1871, contains a record of sales of short-horns for the preceding quarter, and much other information of interest to American stockbreeders. From its pages we compile the following:

Short-horn sale of Messrs. Garne & Son, and Mr. George Garne, at Churchill Heath, October 4, 1870:

	£	s.	d.
54 cows and heifers, at an average of £36 2s. 11d.....	1,951	19	0
3 bulls, at an average of £37 9s.....	112	7	0
57 averaged £36 4s. 3d. Total.....	2,064	6	0

Three cows brought respectively 77, 75, and 85 guineas; the best bull, 50 guineas. The lowest sale was that of a two-year old heifer, at 19 guineas.

Short-horn sale of the entire herd of William Butler, at Badminton, October 5, 1870:

	£	s.	d.
62 cows and heifers, at an average of £39 9s. 2d.....	2,446	10	0
12 bulls and calves, at an average of £32 2s. 3d.....	385	7	0
74 averaged £38 5s. 4d. Total.....	2,831	17	0

The tribe of Darlingtons, comprising 11 animals, averaged £85 3s., the highest, a two-year old heifer, bringing 155 guineas.

Short-horn sale of selected stock from the herd of Lady Pigot, at Branche's Park, Newmarket, October 7, 1870:

	£	s.	d.
21 cows and heifers, at an average of £46 12s.....	978	12	0
9 bulls and calves, at an average of £21 14s.....	195	6	0
30 averaged £39 2s. 7d. Total.....	1,173	18	0

Short-horn sale of Sir George R. Philips, at Weston Park farm, Warwickshire, October 18, 1870, comprising several entire tribes:

	£	s.	d.
38 cows and heifers, at an average of £48.....	1,824	7	6
9 bulls, at an average of £28.....	252	0	0
47 averaged £44 3s. 7d. Total.....	2,076	7	6

Thirteen Sylphs and Knightleys averaged £83 16s. 9d.; 11 Welcomes averaged £33 4s. 4d.; 7 Gwyneths averaged £26 2s. The highest in the whole lot, a two-year old heifer, brought 205 guineas.

Six short-horn bulls from the Brailes herd, the property of H. J. Sheldon, esq., sold at the Weston Park farm sale for £264 12s., averaging £44 2s.

Short-horn sale of John Lynn, at Stroxton, near Grantham, October 27, 1870:

	£	s.	d.
32 cows and heifers, at an average of £46 8s.....	1,484	14	0
7 bulls and calves, at an average of £15 15s	320	5	0
39 averaged £46 5s. 7d. Total.....	1,804	19	0

Short-horn sale of the entire herd of Wm. Cox, esq., at Brailsford Hall, near Derby, November 9, 1870:

	£	s.	d.
26 cows and heifers, at an average of £29 6s. 4d.....	762	6	0
14 bulls and calves, at an average of £20 4s. 3d.....	282	19	6
40 averaged £26 2s. 7d. Total.....	1,045	5	6

The large herd of short-horns belonging to the late Mr. W. Hewer, at Sevenhampton, was sold October 6, 86 head, 25 of which were calves, averaging only £22 5s. 9d. The cattle were not in good condition. Mr. Hewer's Berkshire pigs were celebrated, and brought high prices, the stock of 40 head averaging £11 10s., several being but a few weeks old.

The entire herd belonging to Mr. W. Caless was sold October 12, at Bodicote House, Banbury. The average of the entire herd of 49 head was £24 8s. 7d. The stock was only in fair store condition, and the day was unfavorable.

About 50 head from the herd of J. Fawcett, esq., of Scaleby Castle, Carlisle, were sold under unfavorable circumstances October 20, averaging £24 7s. 10d. Five young bulls, bred by the Right Hon. Lord Kenlis, were sold at an average of £37 7s. 7d.

The late Mr. W. A. Provis's herd was sold November 25, at the Grange, Ellesmere, Salop, but, being in low store order, averaged only £18 7s. 6d. for 30 head.

During the week of the Birmingham cattle show, Mr. B. Wainman, of Whitley Manor, Salop, sold 27 head of short-horns at an average of £23 14s. One four-year old Darlington cow was sold for 110 guineas.

During the week of the York fat cattle show, Mr. Dodds offered for sale at York, December 8, 23 bulls and 17 cows and heifers. Forty-six guineas was the highest price given for a prize yearling bull. Lady Fortunate, a six-year-old cow, and the winner of upward of twenty prizes, was sold for 71 guineas, and Industry, another prize cow, four years old, was sold for 62 guineas. Emily, a yearling heifer, brought 50 guineas.

SUMMARY OF SHORT-HORN AUCTION SALES IN 1870.

A table is given showing the number of lots of short-horn cattle sold in 1870, the highest, lowest, and average prices obtained for them, and the total sum realized from each sale. We glean from it the following particulars: Total number of sales, 42; number of cattle sold, 1,853; highest price obtained, 800 guineas; lowest price, 4 guineas; average of all the sales, £37 19s. 6d.; aggregate of all the sales, £70,363 13s. These figures do not include the Irish and Scotch draft sales, nor the Birmingham and York collective sales, nor a few drafted animals from different herds, most of which were young bulls, offered at stock sales and markets in England; yet they exhibit a most favorable contrast with

the results obtained in 1869 throughout the United Kingdom. There is one-fourth increase in the number of head sold—1,477 against 1,853, over £2 increase in the average price per head, and nearly £18,000 increase in the total sum realized. Eighty-three animals were sold for 100 guineas and above, averaging about £180, against 30 animals in 1868, and 52 in 1869. The highest price, 800 guineas, was given for a heifer, but, as she has since failed to breed, a large portion of this sum has since been returned. The next highest sum paid was 500 guineas for a two-year-old heifer. Only 9 of the 83 were bulls, the highest bringing 240 guineas. Most of the trade for bulls, however, is transacted privately, when higher prices prevail.

The table to which reference has been made is merely a summary of public sales. Much business is done privately, at high prices. The sale of 14 animals from the Aylesby herd for 2,000 guineas is quoted; also the sale of Captain Gunter's 2 Duchess heifers for 2,500 guineas, and of 7 animals from the Warlabby herd for 5,000 guineas, for exportation to America, Australia, and Canada.

At the Irish draft sales, there has been a great increase in prices. Mr. Welsted's 14 averaged £34 1s. 10d.; Earl Fitzwilliams's 14 averaged £31 4s. 9d., and Mr. Crosbie's 26 averaged £23 13s. 1d. In Scotland prices have been similar to those of last year; three lots averaging £32, £32 13s., and £30 7s., respectively.

An enormous foreign trade has been transacted; much of which was done privately, Mr. Cochrane, of Canada, alone spending nearly £15,000 in pure-bred animals.

AMERICAN SHORT-HORNS.

The editor gives a detailed account of a visit, during the past winter, to the United States and Canada, during which he saw several of the leading American herds. Some of these are very minutely and favorably described. Complimentary allusion is made to the fact that the re-importation of short-horns from America into England has been successfully inaugurated within the past few years. He says: "Short-horn breeders, ere this, have been able to form their own judgment upon the cattle that have, since 1861, been sent back into this country, and their offspring have, by their own merit, shown that the blood has suffered little if any degeneracy, even under a change of climate, and on different soil and food."

The following reference is made to the Bates stock of short-horns:

Few strains of blood have created of past years more attention than that of the Duchess tribe; the scarcity and demand for it in this country led to its re-importation from America, where, consequently, it has drawn forth as much, or even more, notice. Although Duchess 34th, generally admitted to be one of the finest of the tribe, was offered by Mr. Bates, in 1835, (whilst in calf, with Duke of Northumberland 1,940, by Belvedere,) to the Ohio Company for 150 guineas, she was not purchased; and the first exportation of Duchesses was made by Mr. Thorne from Earl Ducie's sale in 1853. A period of depression in America ensued afterward, and it is considered that Thorne-dale, Duchess County, New York, situated in a cold, hilly district, near the Hudson River, in its deficiency of limestone, was unfitted for the growth and development of short-horns. Mr. Thorne sold most of his herd to Mr. Sheldon, whose estate at White Springs Farms, Geneva, is in a good grass region, has a fine wheat soil, and is thoroughly adapted for cattle. Here the tribe increased, but domestic circumstances led to the sale of Mr. Sheldon's herd to Messrs. Walcott and Campbell, of New York Mills, Utica, where this branch of the tribe is at present located. Here are (December, 1870) ten cows and heifers, varying from two to ten years old; two heifer-calves; one three-year-old bull, and four bull-calves; but all these cows and heifers are not in a breeding state. There is at the present time great demand for the *pure* pedigree; the word *pure* is here used technically, and is intended to con-

vey the blood of the successive bulls used on the family since the death of Mr. Bates in 1850. It may further interest the uninitiated breeder to know that after Mr. Bates obtained the tribe in 1810, he used Ketton second 710, (whose dam was by a grandson of Favorite 252, out of a cow by J. Brown's Red Bull;) then a *pure* bull, the Earl 646, bred from the Duchess tribe, who in his turn was succeeded by three bulls, of different strains, viz: Second Hubback 1,423, of the Red Rose tribe; Belvedere 1,706, of the Princess tribe; and Norfolk 2,377, bred by Mr. Whitaker, from Nonpareil, with the blood of North Star, Punch, and Hubback; and these three bulls, be it remembered, were all of Robert Colling's best blood. The Cleveland Lad 3,407, (a bull with three crosses,) now generally known as the Oxford cross, was introduced a few years before Mr. Bates's death, and it is only this cross now that is admitted as *pure*. Since the tribe has been in America, some of the animals have been kept *pure*, and the blood of the others has been intermingled with three different families, viz: the Booth blood, through Third Duke of Thorndale 17,749, and Third Duke of Airdrie 23,717; the Knightly blood, through Imperial Duke 18,083; and the Burghley or Romeo 13,619 blood, through Second Duke of Geneva 23,752. It is considered that the Booth and the Knightly crosses are failures, because being very closely or strongly bred tribes, with a fixed type, they disturbed the strong current of the Duchess blood; but Romeo was looked upon as being rather a loosely bred bull, so he therefore seems to have invigorated the tribe without disturbing their good qualities. Romeo was first used with the Oxfords, and produced a very fine cow, whose son, Oxford Lad 24,713, was the sire of Third Duchess of Geneva, the dam of Second Duke of Geneva 23,752. This strain occurs also in Messrs. Leuey's Seventh Duchess of Geneva, and Mr. McIntosh's Third Duke of Geneva 23,753, re-imported and sold at Winslow in 1867. It may be possible that this blood being introduced in an indirect and diluted form, was more beneficial than the others introduced more directly.

AGRICULTURE IN PORTUGAL.

Portugal now contains, as is estimated, a population of four millions, distributed over twenty-two millions of acres. Not more than five millions of acres are under cultivation, and of these more than one-half is devoted to cereals, Indian corn being the staple. Next to the cereals, olives and grapes are the leading agricultural products. The grain crop has been valued at \$28,750,000, the wine crop at \$40,000,000, the olive crop at \$2,500,000, and other fruits and vegetables at \$9,000,000. The annual value of all vegetable products is estimated at \$90,000,000, and animal products at \$25,500,000, or a total annual value of agricultural products of \$115,000,000. Northern Portugal greatly surpassed the other divisions in rural activity, wealth, and density of population. The breeding and exportation of cattle are here upon the increase. Stall-feeding is much practiced. The famous wine-growing district of the Duoro, with Oporto as its central mart, is in this division. In Southern Portugal, where the soil is poor and the climate dry and hot, oranges, lemons, and fruits of all kinds are grown for export.

Farming in Northern Portugal is conducted almost exclusively on a contracted scale. Farms of fifty acres are not common, the average size being less than fifteen acres. Farming operations are conducted on a primitive scale. Plows differ very little from those in use by the Romans; the smaller kind, the one most used, can easily be carried by a laborer. The harrow used is also of rude construction. The hoe is indispensable. Root crops are but seldom grown, and potatoes are almost unknown. Women work habitually in the fields from childhood. Country life, heretofore much neglected, is becoming more attractive and remunerative.

AGRICULTURAL STATISTICS OF GREAT BRITAIN.

	Years.	England.	Wales.	Scotland.	Total for Great Britain.	Ireland.	Isle of Man.	CHANNEL ISLANDS.		Total for United Kingdom.
								Jersey.	Guernsey, &c.	
Total population.....	1870	22,000,163		3,232,837	25,313,000	5,525,210	180,000	148,250	17,907	30,986,460
Total area, (in statute acres).....	1870	32,590,397	4,734,486	19,636,377	56,964,260	20,322,641		28,717		77,513,585
ABSTRACT OF ACREAGE:										
Under all kinds of crops, bare fallow and grass.....	{ 1869	23,370,562	2,530,629	4,438,137	30,339,378	15,643,701	84,537	19,018	13,619	46,100,153
	{ 1870	23,409,318	2,547,717	4,450,544	30,407,579	15,652,578	86,562	19,031	11,680	46,177,370
Corn crops, (including beans and pease).....	{ 1869	7,785,633	553,828	4,117,176	9,758,037	2,207,970	28,365	3,411	2,098	12,000,111
	{ 1870	7,570,279	553,501	1,434,261	9,548,041	2,173,109	28,222	3,634	1,957	11,753,033
Green crops.....	{ 1869	2,759,098	137,452	688,517	3,575,067	1,408,895	12,406	5,836	3,729	5,065,933
	{ 1870	2,759,826	130,203	696,701	3,586,730	1,498,719	12,688	5,749	3,249	5,107,135
Bare fallow.....	{ 1869	644,107	58,786	35,943	738,836	20,981	420	520	612	761,369
	{ 1870	549,291	37,864	23,362	610,517	19,054	384	150	189	630,294
GRASS:										
Clover, &c., under rotation.....	{ 1869	2,004,902	260,899	1,182,925	3,443,726	1,669,800	26,256	4,069	701	5,149,552
	{ 1870	2,706,777	308,282	1,339,825	4,304,884	1,775,835	32,125	6,362	870	6,330,136
Permanent pasturage.....	{ 1869	10,096,094	1,527,534	1,112,269	12,735,897	10,046,877	16,800	5,182	6,468	22,811,284
	{ 1870	9,680,211	1,427,649	904,996	12,072,856	9,990,968	13,631	3,055	5,385	22,065,295
ABSTRACT OF LIVE STOCK RETURNED:										
Total number of horses*.....	1870	977,707	116,131	172,871	1,266,709	531,306	5,810	2,340	1,875	1,808,040
Total number of cattle.....	{ 1869	3,706,641	580,108	1,017,734	5,313,473	3,727,794	18,158	11,758	7,099	9,078,282
	{ 1870	3,757,134	604,749	1,041,434	5,403,317	3,796,380	17,403	11,073	6,879	9,235,052
Total number of sheep.....	{ 1869	19,821,863	2,720,941	6,993,337	29,536,141	4,648,158	62,198	598	1,177	34,230,272
	{ 1870	18,940,256	2,706,479	6,790,854	28,397,589	4,333,984	53,565	655	990	32,786,783
Total number of pigs.....	{ 1869	1,629,550	171,675	120,227	1,930,452	1,079,793	4,668	7,176	6,305	3,028,394
	{ 1870	1,813,901	198,547	158,690	2,171,138	1,459,382	6,332	7,450	6,478	3,650,730
NUMBER TO EVERY 100 ACRES UNDER CROPS, FALLOW AND GRASS:										
Horses*.....	1870	4.2	4.6	3.9	4.2	3.4	6.7	12.3	16.1	3.9
Cattle.....	{ 1869	15.9	23.3	22.9	17.0	23.8	21.5	61.8	52.1	19.7
	{ 1870	16.0	23.7	23.4	17.8	24.3	20.1	58.2	58.9	20.0
Sheep.....	{ 1869	84.8	107.5	157.6	97.8	29.7	73.6	3.1	8.6	74.3
	{ 1870	80.9	106.2	151.7	93.4	27.7	61.9	3.4	8.5	71.0
Pigs.....	{ 1869	7.0	6.8	2.9	6.3	7.0	5.5	37.7	46.3	6.6
	{ 1870	7.7	7.8	3.6	7.1	9.3	7.3	39.1	55.5	7.9
NUMBER OF RETURNS OBTAINED:										
From owners of land.....	1870	393,569	55,978	79,603	529,150	-----	2,328	2,101	1,812	-----
From owners of live stock only.....	1870	4,977	314	2,865	8,156	-----	191	107	70	-----

* In Great Britain only horses used for agriculture, unbroken horses, and mares kept solely for breeding are included in the returns; the number of other horses, subject to license duty, can be otherwise obtained. In Ireland all descriptions of horses are included in the returns.

ENGLISH IMPORTS OF BREADSTUFFS.

A comparative table of the imports of the United Kingdom for the months of January and February, 1870 and 1871, shows that the late Franco-Prussian war almost entirely arrested the importation of breadstuffs from France and Germany during the latter period, and proportionally increased like importations from the United States. Following are the official figures:

Imports in cwts.	1870.	1871.
Wheat from Germany.....	333,047	32,555
Wheat from France.....	8,431	28,286
Wheat from United States.....	1,897,645	2,517,113
Wheatmeal and flour from Germany.....	160,027	24,917
Wheatmeal and flour from France.....	190,395	1,170
Wheatmeal and flour from United States.....	356,232	534,699
Total.....	2,945,777	3,138,740

BRITISH REVENUE.

The revenue of the British government for the year 1870 was £75,434,252, obtained from the following sources:

Customs.....	£21,529,000
Excise.....	21,763,000
Stamps.....	9,248,000
Taxes.....	4,500,000
Property tax.....	10,044,000
Post office.....	4,670,000
Telegraph service.....	100,000
Crown lands.....	375,000
Miscellaneous.....	3,205,252
Total.....	<u>75,434,252</u>

SCIENTIFIC NOTES.

WEATHERING OF COAL.—An important communication has lately been made by Dr. Richters to a German journal, upon the influence of atmospheric agencies on stone coal exposed to the air in coal-yards and other localities. In this memoir he states that the property which coal has of taking up oxygen, when heated gently, (as to 375° F.), is modified essentially by its percentage of disposable hydrogen. This first of all becomes oxidized together with a certain portion of the carbon; since on the one hand water is formed and on the other hand the oxygen enters directly into combination with the coal. Also, that the carbon of stone coal possesses, at a temperature of about 375° F., a variable affinity to oxygen; as the smaller portion (5 or 6 per cent. of the total amount) combines with it and forms carbonic acid, while the rest, at the given temperature, shows little or no affinity for oxygen. While these two propositions respecting the oxidation of coal when heated, can be established, our author adduces experiments to show that they apply equally well at the ordinary atmospheric temperatures.

The so-called weathering of coal he ascribes to the absorption of oxygen, which in one case oxidizes a portion of the carbon and hydrogen of the coal, converting it into carbonic acid and water; in the other, entering directly into the composition of the coal. If then the coal becomes heated in any way, a more or less energetic chemical action, varying in proportion to the elevation of the temperature, takes place upon the combustible substance of the coal; but on the other hand the process of oxidation proceeds so slowly that the changes occurring within the period of a year can scarcely be established with certainty, either technically or analytically.

Moisture, as such, seems to have no accelerating influence upon the weathering of the coal, the positive effect being generally appreciable in coal containing a large amount of sulphuret of iron or pyrites, the decomposition of which is accelerated by the water.

Another proposition of our author is, that pure coal, heaped up for nine months or a year, unprotected from the weather and not allowed to become heated, is changed no more than it would have been in a perfectly dry locality. As long as any increase of temperature does not exceed certain bounds, as from 340° F. to 375° , there is no appreciable loss of weight by the weathering; and, in fact, there should be a slight increase in consequence of the absorption of oxygen. The decrease in value for combustible purposes, and for other technical applications, which coal experiences by the weathering, is produced by a slight decrease of carbon and hydrogen, and an absolute increase of oxygen in consequence of the exposure.

INJURY TO VEGETATION FROM GAS.—It is by no means an uncommon assumption that illuminating gas, in escaping from pipes into the soil, exercises a poisonous influence upon vegetation; and a suit was recently brought at Aix-la-Chapelle, by the city authorities, against a gas company for recovery of supposed damage to the shade trees of the city, resulting from their careless method of laying the pipes. This was the cause of a detailed series of experiments in regard to the assumed fact, and somewhat to the surprise of every one it was ascertained that purified illuminating gas had really little or no injurious effect of the kind asserted. The experiments were conducted by eminent chemists, and included trials with pure hydrogen, light carburetted hydrogen, and heavy carburetted hydrogen, as well as purified illuminating gas. A discharge, during an entire day, of these various gaseous substances into the soil of vessels containing growing plants was found to produce little, if any, hurtful result. It was different, however, when these same gases were impregnated with the constituents of coal tar, especially with carbolic acid, in which case, after a few days, a very decided injury to the vegetation was found to have taken place. The effect seemed to be that these impurities, coming in contact with the roots of the plants, deposit tarry matter upon them which ultimately caused death by a kind of asphyxia. The smallest quantity of carbolic acid was found to have a very decided influence; so that the principal caution to be observed, as far as injurious results are concerned, is to see that the carbolic acid is entirely eliminated. In one experiment a discharge of gas was allowed to take place for three hours daily, for a period of an entire year, and the effect, if anything, was to secure a fuller development of the plant.

All that those experiments appear to prove, however, is that perfectly pure illuminating gas is not injurious to the roots of vegetation, the fact remaining demonstrable that ordinary gas does have a marked noxious effect. The elaborate communication in 1858 to the Philadel-

phia Academy of Natural Sciences, by Mr. Fahnestock, shows this very clearly in a case where the contents of a large green-house were destroyed. In another instance a stroke of lightning, passing along the street gas-mains in Racine, in 1867, disturbed their joints and caused a leakage which resulted in the death of nearly all the shade trees along an entire square.

SIEMENS' STEEL.—Among the various methods of preparing steel, that of Siemens, so well known in connection with an improvement of the smelting furnaces, is likely, it is said, to attain considerable prominence, possessing various advantages, both as to economy and the character of the product, over many others in common use. For its preparation good hæmatite ore and spathic ore are mixed and treated with carbonaceous materials, by which their total or partial reduction into metallic iron is effected. This metallic iron is then subjected to very intense heat on the open hearth of a Siemens regenerative gas-furnace, and is dropped in certain given quantities or series of instalments into a bath of cast-iron, previously prepared in the furnace. This operation is continued until the requisite degree of decarbonization is arrived at; the manganese is added in the form of ore or spiegeleisen. The quantity of molten metal thus produced in one charge is about four tons. It is dipped into a ladle and poured into iron molds in the usual way, and forms steel of the highest quality. To those acquainted with the ordinary way of making steel, the superiority of this process will be manifest, while as regards cost it effects a great saving. One ton of steel ingots may be produced with a ton and a half of cheap small coal. The ordinary Sheffield process requires from five to six tons of fuel for one ton of steel.

COLORS FROM WILD PLANTS.—A German writer shows that a great variety of colors and dyes can be readily obtained from common plants found almost everywhere, the method consisting principally in boiling them in water at a high temperature, so as to produce a strong decoction. Thus, for instance, the well-known huckleberry, or blueberry, (*Vaccinium*,) when boiled down, with an addition of a little alum and a solution of copperas, will develop an excellent blue color. The same treatment, with a solution of nut-galls, produces a clean dark-brown tint; while, with alum, verdigris, and sal-ammoniac, various shades of purple and red can be obtained. The fruit of the elder, (*Sambucus niger*,) so frequently used for coloring spirituous liquors, will also produce a blue color when treated with alum. The privet (*Ligustrum vulgare*,) boiled in a solution of salt, will furnish an excellent color; while the over-ripe berries yield a scarlet-red. The seeds of the common burning-bush, (*Euonymus*,) when treated with sal-ammoniac, produce a beautiful purple-red; while the juice of the currant, pressed out and mixed with a solution of alum, will furnish a bright-red color. The bark treated in the same way produces a brown. Yellow can be obtained from the bark of the apple-tree, the box, the ash, the buckthorn, the poplar, elm, &c., when boiled in water and treated with alum. A lively green is furnished by the broom-corn, (*Spartium scoparium*;) and brownish-green by the genista.

THE AILANTHUS TREE.—The disagreeable smell of the ailanthus tree while in blossom need be no objection to the planting of it on a large scale as a timber tree, since, as is well known, it is diœcious, and the male tree alone possesses the unpleasant peculiarity. It is only necessary to propagate the female tree, therefore, in order to have an equally fine grove without the practical inconvenience referred to. It so happened

that on the first introduction of the tree into this country, the male tree alone was propagated. The female, however, is coming more rapidly into use, and may readily be known by the clusters of seeds it bears, similar to those of some species of the ash family.

There are few trees more valuable for timber than the ailanthus. The wood has much of the same properties as the chestnut, and is equally durable, grows with as great rapidity, and in its native country obtains a height of between two and three hundred feet. It is said to be well adapted to growth on the western prairies, and will undoubtedly perform an important part in clothing them with forest vegetation.

PURIFICATION OF OIL.—Of various methods adopted for the purification of burning-oils, that of Michaud is recommended as the most satisfactory. This consists in introducing sulphuric acid into the oil in numerous thin streams, while air is forced in at the same time, so as to throw the liquid into an active movement. The air bubbles which mix with the oil give it a milky appearance, and carry the impurities with them to the surface and form a copious scum, which is removed from time to time. After each skimming air is introduced anew until the surface continues entirely clear.

For the purpose of freeing the oil from sulphuric acid it is then to be placed in a copper kettle, and steam introduced until it is heated to 212°. At this temperature it is kept for half or three-quarters of an hour, during which it becomes sufficiently clear to be filtered. The oil is then drawn off and allowed to cool down to half the temperature mentioned, either by allowing it to stand for twenty-four hours, or taking it through a cooling tube and then filtering it. It is said that oil, treated in this way, exceeds in illuminating power and transparency that prepared by any other method, while the process is neither costly nor protracted.

DARLINGTONIA CALIFORNICA.—Mr. Worthington G. Smith calls attention in "Nature" to certain living plants of *Darlingtonia Californica*, or the American pitcher plant, described many years ago in the Smithsonian Contributions, by Dr. Torrey, from specimens brought by General Frémont from what is now Nevada. According to Mr. Smith, the plant possesses an irresistible attraction to insects, the nature of which is entirely unaccountable. When in bloom the flower is said to resemble the upraised head and body of the cobra, with mouth expanded, and prepared for a spring, the head being at right angles with the hollow, vertical body, and apparently presenting no opening by which an insect can enter. Blue-bottle or blow flies are said to make their way immediately to this plant whenever they come into a room where it is growing, and alighting on a portion of the flower, they fly upward into the previously unseen entrance to the tube, and from this they descend the hollow body, and apparently never return alive, keeping up a buzzing noise for half an hour and then dying. This cavity of the plant soon becomes entirely filled with dead flies, so that, as a consequence, the walls decay and the insects drop out.

LEACHED ASHES AS A MANURE.—An agricultural journal of Germany calls renewed attention to the great value, as a manure, of soap-boilers' leached ashes, which, as is well known, are prepared by mixing wood-ashes with fresh burnt lime, and boiling or leaching the two together for the purpose of obtaining a caustic lye. Although the soluble salts are removed from these ashes, the insoluble parts remain, namely, the carbonates, sulphates, and phosphates, principally lime salts, accompanied generally by a little caustic lime. Experience has shown that

there is no substance equal to leached ashes of this kind for manure, not excepting even the richest guanos; the vegetation of the cereals becoming broader than common by its use, and the stalks more tubular, while the leaves grow of a dark, bluish green. The value of this application is seen more particularly in meadows, where, curiously enough, nearly all the ordinary grass disappears in consequence, and instead of it a thick vegetation of red clover is met with, which will be renewed year by year for a long time, without additional supply.

PRESERVATION OF DEAD SALMON FOR AN INDEFINITE TIME.—Of late years salmon have been quite abundant in our markets throughout the winter season, a period when previously they were unknown, owing to the fact of their being then, with few exceptions, in the deep waters of the sea. For this purpose they are taken in the summer months, when the fish are in the rivers and in best condition, and are packed in snow as soon as caught, and in that condition carried to the establishments where they are to be preserved. They are first overhauled and sorted, and then put into a room where, by means of a mixture of ice and salt placed between zinc plates, the temperature is kept many degrees below the freezing point. The fish are soon frozen, and can be kept in that state many months and even years, provided the temperature be kept steadily down to the proper degree. In the winter season, the salmon thus frozen are shipped, properly packed in ice, being carried in that condition all over the country. It is said that the taste of these fish, if cooked directly after having been thawed, is fully equal to what it would be if eaten at the time of capture.

TREATMENT OF WOOD FOR PAPER PULP.—Mr. Manè informs us that the proper method of treating wood to make it a suitable material for the manufacture of paper consists in first reducing it to a state of shavings or sawdust, and then placing it for a time (the duration of this depending upon the nature and state of division of the wood) into water, and leaving it there to rest, as is done with flax. By this treatment a great many substances are removed from the wood, which is consequently afterward more readily reduced to pulp. The rotting in water has the effect of disintegrating, and partly decomposing the nitrogenous matter of the woods, which is also afterward more readily bleached; not demanding the use of chlorine, as is the case where these matters have been left in the wood. The rotted wood, previous to any other treatment, is to be thoroughly washed with boiling water and steamed, and next treated with an alkali.

EFFECT OF MANURE ON PLANTS.—A communication, illustrated by diagrams, was lately presented to the Horticultural Society of London, in reference to the effect of manures upon plants in the experimental grounds at Chiswick. As a general rule, plants in unmanured boxes were less vigorous than in those manured; and while purely mineral manures had little effect upon the grasses, they produced a marked improvement in the case of the clovers. Experiments with solutions of ammonia salts and with nitrate of soda, showed specific differences in the results in the case of almost all the different species of plants, and it was found that a plant affected favorably by one of these groups of salts was influenced in quite the opposite manner by the other.

THE COMPASS PLANT.—Many travelers and residents in the West have called attention to a peculiarity of the so-called "compass plant," (*Silphium laciniatum*), of the western prairies, which is alleged to possess the remarkable tendency to have the plane of its leaves directed

north and south to such a degree that these points of the compass can readily be determined from their examination. This statement has, however, been contradicted by others, who are unable to find any tendency of the kind in question. In a recent paper by Mr. Meehan, of Philadelphia, the discrepancy is reconciled by stating that the peculiarity is only appreciable in the young plants and when they first come up, since, after becoming large and heavy, they are moved out of place by the wind and rain, and unable to regain their original position.

USES OF THE "WATER-PEST" PLANT.—Much alarm has been caused in Europe by the spread of a certain plant, living in running water, called the water-pest, (*Elodea canadensis*,) and said to have been introduced from America. By its very rapid growth it speedily chokes up the channel-ways, thus impeding the flow of water in mill-races, and interfering also with fishing. A recent German writer, however, finds consolation in the fact, which he thinks he has ascertained, that this "water-pest" exercises a very important function in purifying the water, and that if planted in streams which form the drainage of sewers, it will take up entirely and destroy any disagreeable smell, as also the noxious properties of ordinary sewerage. The composition of its ashes is said to be extremely complicated, and the plant itself is recommended as furnishing a manure of the greatest value. It has also been tried with success in paper-making.

CIRCULATION IN PLANTS.—In conducting experiments upon the transpiration of fluid by leaves, it is a matter of importance to determine the rapidity of ascent of the fluid. Professor Church suggests for this case the use of lithium citrate, a salt easily taken up by plants, and one which can be detected with the greatest readiness by means of the spectroscope. Its advantages consist in its containing an organic acid, and in not being likely to meet with any obstruction to its passage from the tissues. An experiment has lately been made with this liquid, as suggested, with great success; in one instance the fluid having risen nine inches in thirty minutes, in another five and a half inches in ten minutes. This is thought superior to the use of coloring matters, which seemed to experience considerable resistance in their passage through the vessels.

PRESERVATION OF MILK IN RAILWAY TRANSPORTATION.—Among the precautions taken by an extensive milk company, near London, to insure the safe transportation of milk and cream by railway, that to which the most importance is attached consists in the cooling of it to the temperature of 50° to 59° Fahrenheit before filling the cans. Should the milk be placed in the cans at a higher temperature, as from 70° to 82°, the motion of the cars will cause the butter to separate as well as to produce a deposit of caseine, which change need not be apprehended when milk is at the lower temperature indicated. A further requirement is to have the vessels completely filled with the milk, and closely fastened. Sometimes a small proportion of bicarbonate of soda is added to the milk in hot weather, with important results in preventing it from turning sour.

DESTROYING LARVÆ OF COCK-CHAFFER.—It is said that the destructive larvæ of the cock-chaffer, which, both in this country and in Europe, does so much damage to pastures, by devouring the roots of grass and causing the death of the sod, may be exterminated by applying to the places affected water in which petroleum has been stirred. The same treatment is also recommended in other instances where it is desirable to keep down the ravages of insects on plants. Applied in this way

there is no danger of injuring the plant, and a small quantity of petroleum appears to impart its antagonistic qualities to a considerable amount of water.

THE HEATON AND BESSEMER PROCESSES.—A careful report by an eminent iron-master in France upon the respective merits of the Heaton and Bessemer processes of refining iron, presents the conclusion that while the former is not likely to replace the latter for the manufacture of steel, yet it is the best hitherto invented for the purification of ordinary cast iron. It may be remembered that the Heaton process consists, essentially, in the addition of nitrate of soda to the melted metal, by which all the impurities, such as carbon, sulphur, phosphorus, &c., become chemically combined with the nitrate and pass off with a loud deflagration in the form of vapor, leaving the metal in a state of extraordinary purity.

SEASONING OF WOOD.—A writer in an English journal informs us that small pieces of non-resinous wood can be seasoned perfectly by boiling four or five hours—the process taking the sap out of the wood, which shrinks nearly one-tenth in the operation. The same writer states that trees felled in full leaf, in June or July, and allowed to lie until every leaf has fallen will then be nearly dry, as the leaves will not drop of themselves until they have drawn up and exhausted all the sap of the tree. The time required is from a month to six weeks, according to the dryness or wetness of the weather. The floor of a mill laid with poplar so treated, and cut up and put in place in less than a month after the leaves fell, has never shown the slightest shrinkage.

WATERING PLANTS WITH HOT WATER.—It has lately been shown, by careful experiment, that sickly potted plants, even some that have almost died out, can be greatly benefited, and sometimes, indeed, entirely restored to vigor, by applying warm water to them instead of cold. In certain cases, oleanders which had never bloomed, or did so only imperfectly, after being treated with luke-warm water, increasing the temperature gradually from 140° up to 170° F., produced the most magnificent luxuriance of bloom. Similar results occurred with an old plant of Hoya; and also with an India-rubber tree which had nearly withered away. In all these cases the application of water heated to about 110° F., without any other precaution, caused a new and flourishing growth.

TRANSPIRATION OF LEAVES.—Von Pettenkofer, in the course of recent researches upon the amount of evaporation which takes place from the foliage of plants, ascertained in the case of an oak tree that this increased gradually from May to July, and then decreased till October. The number of leaves on the tree were estimated at about 751,600, and the total amount of evaporation in the year at 539 cubic centimeters of water for the whole area of the leaves. As the average rain-fall for the same period was only 65 centimeters, the amount of evaporation is thus eight and a half times greater than that of the rain-fall. This excess must, of course, be drawn up by the roots from a great depth. The inference is derived from the above that trees prevent the gradual drying of a climate by restoring to the air the moisture which would otherwise be carried off by drainage.

CATTLE PLAGUE ENTOZOA IN CEYLON.—In the course of an examination of the muscles of animals dying at Ceylon of the cattle plague disease of that country, Mr. Boyd Morse discovered certain remarkable organisms, of which he has lately published an account in the London

Microscopical Journal. He suggests the inquiry as to their relationship to the entozoa, described by Dr. Lionel Beale as found in the muscles of animals dying of the same disease, and thinks they may be their ova. They lie loose among the muscular fibers of the heart, sometimes in great numbers and at other times singly. There are several characteristic forms, all well figured in the article referred to.

FOOD FOR YOUNG TROUT.—According to Dr. Slack, the well-known proprietor of the Troutdale fish-breeding establishment, in New Jersey, the best substance with which to feed embryo trout hatched out artificially consists of beef's heart, prepared by first being opened that the coagulated blood may be washed away thoroughly, and then using only the pure muscular fiber. This is to be finely chopped into minute fragments, so as almost to form a pulp; and then, mixed with a little water, it is to be washed through a fine sieve of twenty-four threads to the inch, to prevent any minute particles from passing through.

SEASON FOR CUTTING TIMBER.—According to Dr. Hartig, March and April are the most favorable months for cutting timber intended to be used by builders and carpenters, the average per cent. of moisture being less than 47, while in the three following months the average is 48; and in the three winter months, 51. He states that properly-seasoned timber contains from 20 to 25 per cent. of water, and never less than about 10 per cent., and if the moisture is entirely removed by artificial means the wood loses its elasticity and flexibility, and becomes brittle. Any artificial seasoning of wood should be carried on very gradually; the temperature at the beginning being low, and the process not conducted too far.

QUERCITRON.—Among the drugs and dye-stuffs of American origin, quercitron, or the inner bark of the common black oak, occupies a conspicuous place. Lately a new treatment has been devised in England in preparing it for the market, in consequence of which its value has risen considerably, so that it now brings about \$3 per hundred-weight. Of the various brands in the market, that of Philadelphia is most sought for on account of its supposed superiority over the others.

CATTELL'S METHOD OF PREPARING VEGETABLE FIBER.—A system of utilizing vegetable fibers that does not involve the practice of rotting, has lately been devised by Dr. Cattell, and is said to be coming rapidly into use. The special superiority of the fiber prepared by this system is said to be that it possesses a greater degree of strength, estimated at 20 per cent. over the rotted article. The yield of fiber is also considerably greater from the same weight of material, while its divisibility can be carried to much more than the ordinary degree, and the whole labor accomplished in much shorter time.

STIMULATING HENS TO LAY WHILE MOULTING.—According to a good authority in poultry-raising, it is considered inexpedient to encourage hens to lay while moulting. When new feathers are forming the ovary usually remains perfectly dormant, and in fact sometimes becomes greatly reduced in size. When, however, the feathers are renewed, if a hen be judiciously fed, and in good health, the production of eggs will soon recommence.

NEW CATERPILLAR DISEASE.—In a late paper by Dr. Cohn, of Breslau, upon a new disease affecting certain caterpillars, during which the skin turns black, a coal-black pigment appears in the blood, and the caterpillar becomes a wrinkled and brittle mummy, he ascribes the phe-

nomenon to the development of a fungus which he calls *Tarichium*, and which has a strong relationship to *Empusa*.

POISONING OF CATTLE BY ACORNS.—It is stated that cattle died by scores in Gloucestershire, England, during the past fall, from having eaten acorns that had fallen off during a gale. When once taken ill, death followed more or less quickly in each case, no remedy being sufficient to allay the resulting inflammation. The poison appeared to induce a blackening and rotting away of the mucous membrane.

CALOMEL A POISON FOR MICE.—A preparation of one part calomel, five parts of wheat flour, one part of sugar, and one-tenth of a part of ultramarine, all mixed together in fine powder and placed in a dish, is said to be a most efficient poison for mice.

GLYCONIN.—A mixture of five parts of glycerine and four parts of yolk of egg, under the name of glyconin, has been used to some advantage for the healing of wounds, the mixture forming a varnish over the skin impenetrable to air and moisture.

GIANT MARMONT POTATO.—A potato known as the Giant Marmont is much praised by late German writers, as occupying the very first rank among potatoes, in consequence of various excellent peculiarities. A single tuber was said to have produced a weight of twenty pounds.

ITEMS FROM VARIOUS SOURCES.

COAL IN WYOMING TERRITORY.—A correspondent of the New York Evening Post writing from Cheyenne concerning the coal deposit of Wyoming, says that an analysis of the Evanston coal shows that in one hundred parts there are, of carbon, 72.16; ashes, 2.50; sulphur, none; water, 3.34; volatile matter, 22. This coal is supposed to be the purest found in the Territory. The Hallville mine, in Carter County, on the line of the Union Pacific, contains two veins, with a stratum of soapstone lying between. The upper vein is ten feet and the lower six feet in thickness. Fifteen thousand tons from this mine have been used in Omaha during the past year. It is used principally for domestic purposes. The Vandyke mine, forty miles west of Hallville, produces coal which is used mainly for steam and blacksmithing purposes. Of this coal 80,000 tons were sold in Omaha in 1870, and the remainder of the year's production was distributed throughout the Western Territories for manufacturing purposes. The Carbon mines, recently burned, are on the railroad one hundred and forty miles west of Cheyenne. The coal is reached by a perpendicular shaft, seventy feet deep. The vein is from six to nine feet thick. Before the explosion it produced 300 tons daily, and the Denver division of the Kansas Pacific Railroad was supplied from it. The Rock Spring mine, three hundred and fifteen miles west of Cheyenne, is eight feet in height, and is reached by an open drift in the side of the hill. The product of this mine in 1870 was about 2,000 tons per month. Explorations lately made show that the coal deposits of Wyoming cover a very large area. Many of the best veins have not yet been worked. The lignite deposits of the Laramie Plains, in beds from five to eleven feet thick, have been traced ten miles east of Rock Creek, a branch of Medicine Bow River, and crop out along the North Platte, Muddy

Creek, Bitter Creek, Echo Cañon, Weber River, and west as far as the borders of Utah. The same deposits have been found eighty miles above Fort Laramie. The whole product of the Wyoming coal mines is now estimated to be about 20,000 tons per month.

THE SELF-PURIFICATION OF RIVERS has recently attracted the attention of scientific men in England. The discharge of sewage into rivers in the vicinity of densely populated communities, it has been claimed, is not an evil, because the rivers possess the property of self-purification in exposure to the action of the atmosphere, and in the precipitation of impurities to their bottoms. The clear appearance of water after it has been polluted, and has flowed for a short distance, is alleged to be proof of purification. But this theory of the unscientific public has been refuted by experiments made by an English commission, appointed for the purpose of testing its truth. The results indicate very closely the effect which would be produced by the flow of a river or stream containing 10 per cent. of sewage for ninety-six and one hundred and two miles respectively, at a rate per hour of one mile. The percentage reduction of the organic carbon in the first distance would be 6.4, and of organic nitrogen, 23.4. For the latter distance the corresponding figures are 25.1 and 33.3. As the temperature during this experiment was nearly 70° Fahrenheit, it demonstrates that the oxidation of the animal organic matters in sewage proceeds very slowly. It was also demonstrated, by another experiment on the rate of oxidation of sewage, that supposing a river polluted with the above proportions of sewage received no further contamination for a distance of one hundred and eighty-six miles, it would then lose about 62.3 per cent. of its injurious and offensive properties. But most streams which are polluted by animal or vegetable matter receive the pollution near to the cities and towns which use them; hence, no stream which supplies cities and towns with water can be regarded as even approximately pure, unless the emptying into it of all sewage and manufacturing refuse is prohibited.

THE NUTRITIVE VALUE OF MILK.—Dr. Oliver C. Wiggin, of Providence, Rhode Island, bears the following testimony to the value of milk:

The nutritive value of milk, as compared with other kinds of animal food, is not generally appreciated. There is less difference between the economical value of milk and beefsteak (or eggs or fish) than is commonly supposed. The quantity of water in a good quality of milk is 86 per cent., in round steak 75 per cent., in fatter beef 60 per cent., in eggs about 63 per cent. From several analyses, made last winter, I estimated sirloin steak, (reckoning loss from bone,) at 35 cents a pound, as dear as milk at 24 cents a quart; round steak, at 20 cents a pound, as dear as milk at 14 cents a quart; eggs, at 30 cents a dozen, as dear as milk at 20 cents a quart. Many laborers who pay 17 cents for corned beef would consider themselves hardly able to pay 10 cents for milk, when, in fact, they could as well afford to pay 15 cents. Milk is a most wholesome and economical food for either the rich or poor. It ought to be more largely used. If the money expended for veal and pork were expended for milk, I doubt not it would be an advantage both to the stomach and pocket, especially during the warm season. Relatively speaking, then, milk at 10 cents, or even 12 cents a quart is the cheapest animal food that can be used. Whether farmers can afford to produce it cheaper is a matter for them to decide. It is very probable that were they to ask 12 cents a very large number of poor people would refrain from its use from mistaken notions of economy, notwithstanding they are excessive meat-eaters.

CENTENNIAL EXHIBITION.—The Forty-first Congress, at its third session, passed an act "to provide for celebrating the one hundredth anniversary of American Independence, by holding an international exhibition of arts, manufactures, and products of the soil and mine, in the city of Philadelphia, in the year 1876." The act specifies that this exhibition shall be held under the auspices of the Government of the

United States, which shall be represented by a commission composed of one delegate from each State and Territory, to be appointed, within one year from the passage of the act, by the President of the United States; upon the nomination of the governors of the States and Territories, respectively. This commission is empowered to prescribe all necessary regulations for holding the exhibition, and these regulations the President is authorized to make public by proclamation and to communicate to the diplomatic representatives of all nations. The exhibition will present an opportunity for a comparison of progress in the arts of civilization accomplished in a single century in this country with the best results of human effort elsewhere.

PROPOSED DOG LAW IN ILLINOIS.—A bill introduced in the legislature of Illinois, provides stringent regulations concerning dogs. It declares that every owner of a dog shall, on or before the 1st of September, procure from the town clerk, and cause to be worn, a collar for each dog he may own; the clerk to keep a record and description of all dogs for which collars are obtained, with the names of their owners. For each dog registered he is to be paid a fee of \$1. Any dog not wearing a collar and registered is to be considered as abandoned, and it shall be lawful for any person to slay such dog as he would a wild animal. The assessors shall procure lists of all registered dogs, and shall also make return of all abandoned dogs, with the names of persons who harbor them. A tax of \$1 shall be paid for each registered male dog, and a tax of \$2 for each registered female dog. Owners of dogs are made liable for all injuries the latter may inflict. Any person may kill a dog which makes a sudden assault upon him outside the inclosure of his owner or keeper, and any person may kill a dog found outside the inclosure or immediate care of its keeper worrying, wounding, or killing any domestic animal.

ALMOND TREES IN CALIFORNIA.—A record of the growth of an almond stock, reported by the editor of the Santa Barbara (California) Press, illustrates the adaptability of that favored region to the production of this valuable fruit. Early in 1869 he made several grafts, all of which are now promising. One of these, a terminal bud of the Languedoc variety, made February 22, was measured three months afterward, when the new stock above the old wood was found to be an inch and a half in circumference and three feet high, with six or eight branches averaging eighteen inches in length. On the 22d of March last, exactly two years and one month from the day of grafting, the tree measured nine and three-fourths inches in circumference at the ground, and was ten and a half feet high, with twenty flourishing branches within four feet of the ground, and over thirty in all. Up to that date it had furnished more than a thousand buds and several hundred grafts. A three-year old seedling, planted also by Mr. Johnson, now measures fourteen and a half inches in circumference, and was fifteen feet high when recently cut off for grafting.

SEWAGE IRRIGATION.—Dr. Spencer Cobbold, of England, has microscopically demonstrated the presence of thousands of entozoa in pork which had been fed upon the produce of lands irrigated with sewage. The introduction into the human system of countless entozoa, through the medium of cattle fed upon sewage-irrigation grass, and swine fed upon other food similarly produced, is regarded as a new danger with which the public health is threatened. It is the deliberate opinion of Dr. Cobbold that thousands of cattle in England are thus rendered unfit to be used as food.

THE MARVELOUS GROWTH of some of our Western States and Territories is well exemplified in the history of Jackson County, Kansas. Below is a comparison of the census returns of agriculture, &c., for that county for 1860 and 1870:

	1860.	1870.	Increase.
Population	1,936	6,053	4,117
Acres of improved land.....	5,294	41,388	36,094
Cash value of farms.....	\$210,900	\$2,305,240	\$2,094,340
Value of farming implements and machinery	\$12,515	\$84,995	\$72,480
Whole number of live stock	4,755	21,334	16,579
Value of live stock.....	\$58,091	\$685,064	\$626,973
Number of bushels of farm products.....	204,042	697,865	493,823
Number of pounds of butter, cheese, and wool.....	23,830	144,859	121,029
Tons of hay.....	519	16,763	16,244
Gallons of molasses	590	18,150	17,560
Total valuation of farms, farm implements, machinery, and live stock.	\$281,506	\$3,075,299	\$2,793,793

Up to 1867 only one-half of the county was open for settlement.

GLUT OF JAPANESE SILK-WORM EGGS.—Last year a number of French and Italian agents passed through San Francisco for Japan to purchase silk-worm eggs. Their credit was estimated at \$5,000,000 to \$6,000,000. The usual purchases ran as high as 2,000,000 cartoons, but the war ensuing not more than 150,000 cartoons were really taken. This left the Japanese egg-trade in a bad condition, and resulted in the sending of some lots to San Francisco, 150,000 cartoons recently arriving. Unfortunately for the shippers the season is over in California. There are not means in the State to feed 1,000 cartoons of silk-worms. The eggs are now, probably, partly hatched, and will not keep for Europe, and are not in very high estimation there if they would. They do not at all compare with the California eggs of the French annual variety. It remains to be seen what effect this short supply of eggs in Europe this year will have upon the California demand next year.

CATTLE MARKETS IN THE SOUTH.—The South is manifesting a new interest in the improvement of farm animals. The first grand stock, seed, and implement sale of the Tennessee Agricultural and Mechanical Association will take place at the fair grounds, near Nashville, on Wednesday, Thursday, and Friday, the 3d, 4th, and 5th of May, 1871. Full pedigrees of breeding animals offered for sale are required. Persons desiring to offer animals or articles should, as soon as practicable, forward lists to John H. Williams, general agent, that they may appear in the programmes.

BUTTER-MAKING IN THE "GREAT AMERICAN DESERT."—Dr. Sternburg, of Fort Harker, Kansas, finds the "Great American Desert" of the old geographers admirably adapted to stock-raising and dairy enterprise. He keeps 130 head of cattle, and milks 30 cows, from which, last summer, he marketed 3,000 pounds of butter at 50 cents per pound. The stock finds ample subsistence from natural grasses, except about three weeks in the year, during which the snow covers the ground. He prefers improved breeds of cattle to the Texan or native stock, and insists upon commencing with good cows, which should be fully supplied with good water and salt, and milked regularly every day. The milk

should be churned every day, the butter thoroughly worked, and the dairy kept perfectly clean.

CHEESE FACTORIES IN ENGLAND.—The manufacture of cheese by the factory system is an American idea, and until recently has been exclusively an American enterprise. During 1870 the system was introduced into England, and two factories were established in Derbyshire. No Englishman was found to possess sufficient experience to manage them, and two Americans, named Schermerhorn, were engaged to perform this service. Both factories are now in successful operation.

KOUMISS.—This is the name of an article of food recently introduced into England from Germany. It is of Tartar origin, and in its original form is made by fermenting mare's milk and agitating it during the process. Cow's milk is used as a substitute. The result of the treatment is a mixture of alcohol, carbonic acid, lactic acid, and finely divided caseine and butter, with the residue of the sugar and salts of the milk, in taste resembling a mixture of champagne and cream, and supposed, as the Tartars are very athletic, to be conducive to health and a preventive of phthisis.

PRESERVATION OF FRUITS AND VEGETABLES.—An invention of Mr. Buchanan for preserving fruits and vegetables is attracting some attention in England. The moisture is expelled by a cold dry process, instead of the former modes of desiccation by heat. It is said to preserve vegetables and fruits in a much more perfect and palatable state than the heating process so generally in use.

JUTE.—Augustus F. Leory, of New Orleans, writes to the Department, under date of March 11:

You were kind enough last year to send me several papers of jute seed. These I planted myself on my place seventy miles below this city, on the banks of the Mississippi River. In three months the plants grew, with little or no cultivation, ten feet high. They fully matured and produced abundance of seed. I am now fully satisfied that jute can be produced throughout all the sugar-growing portion of this valley.

BORAX.—A large deposit of borax has been discovered in Bishop Creek precinct, Inyo County, California. The borax is found in beds, and is slightly impregnated with saltpeter. It is pronounced to be of a superior quality.

LARGE HONEY PRODUCT.—Rev. Robert Johnson, of Kossuth, Des Moines County, Iowa, reports to this Department that he has colonies of bees that gave him 150 pounds of honey each during the past year.

METEOROLOGY.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature, and amount of rain and melted snow, (in inches and tenths,) for February and March, 1871, at the stations named. Daily observations made at 7 a. m., and 2 and 9 p. m

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
MAINE.												
Houlton	27	Deg. 49	5	Deg. —20	Deg. 16.0	1.20	12	Deg. 51	7	Deg. 14	Deg. 32.4	2.23
Orono	25	47	5	—17	19.9	2.53	10	57	29	17	34.7	4.11
Surry	25	49	5	—16	20.9	.....	10	55	29	20	36.7	.....
Williamsburg	25	40	5	—26	12.4	2.00	11	46	29	10	28.8	3.10
West Waterville	25	50	5	—12	22.0	1.98	11	57	29	20	37.1	5.63
Gardiner	25	47	5	—10	23.0	1.55	10, 11, 12	54	29	24	37.7	5.37
Lisbon	25	51	5	—12	22.4	2.80	13	56	29	18	36.6	5.30
Standish	24	54	5	—13	23.4	1.94	11	60	29	24	37.9	5.24
Norway	25	47	5	—12	20.5	2.10	11	55	29	20	35.2	5.00
Cornish	1	48	4	—9	22.4	3.01	11	56	24	25	36.2	3.90
Cornishville	25	46	4	—10	22.6	3.25	11	54	29	20	36.8	5.40
NEW HAMPSHIRE.												
Strafford	24, 25	43	4	—18	16.7	2.72	9	60	29	2	32.3	3.80
Whitefield	24	50	5	—22	17.5	1.47	11	59	29	3	33.6	2.61
Mt. Washington	24	35	4	—34	7.3	.....	.....	.....	.....	.....	.....	.....
Tamworth	24, 25	47	22, 23	—14	21.0	2.40	11	57	29	22	36.0	5.46
Contoocookville	24, 25	53	5	—14	24.6	.....	12	62	8	24	39.5	.....
Goffstown Centre	24, 25	52	5	—10	24.8	3.25	.....	.....	.....	.....	.....	.....
Amoskeag .....	.....	.....	.....	.....	.....	.....	12	62	29	11	38.0	3.48
VERMONT.												
Lunenburg	25	40	5	—28	17.5	2.10	10, 12	53	29	14	34.4	3.50
Craftsbury	24	46	5	—25	14.9	1.57	11	51	7, 29	13	29.9	4.06
South Troy	24	50	5	—26	17.7	2.02	11	58	29	4	33.6	4.19
Randolph	25	48	5	—18	20.9	2.80	11, 12	57	29	3	35.7	3.47
Woodstock	25	42	5	—19	17.8	3.09	11	55	29	10	33.6	3.37
Norwich .....	.....	.....	.....	.....	.....	.....	11, 31	58	7	24	38.0	4.30
Near St. Albans	24	48	5	—21	18.0	1.70	9	61	29	11	34.7	4.40
West Charlotte	18	50	5	—16	23.6	1.90	11	62	7	23	39.4	5.50
Panton	25	48	5	—18	20.2	2.19	11	60	24	20	36.2	5.49
Castleton	18	45	5	—16	21.5	2.51	12	62	29	18	37.4	2.79
MASSACHUSETTS.												
Kingston	25	58	5	—7	27.4	3.90	12, 19	63	1, 2	22	39.8	4.55
Topsfield	24, 25	50	5	—10	25.2	3.78	.....	.....	.....	.....	.....	.....
Newbury	24	57	5	—7	26.3	.....	.....	.....	.....	.....	.....	.....
Lawrence	24, 25	50	5	—10	26.1	1.65	12	63	28	27	39.1	4.02
Georgetown	25	53	5	—9	26.2	3.64	12	67	29	25	40.2	3.53
Milton	25	56	5	—5	29.2	3.40	12	66	29	28	44.1	2.59
Cambridge	24	59	5	—11	29.1	.....	12	66	27, 28, 29	31	43.5	.....
North Billerica	18	59	5	—8	28.0	.....	12	66	23	25	41.0	.....
West Newton	25	28	5	—8	28.3	.....	12	69	29	27	42.5	1.18
New Bedford	25	55	5	—6	27.9	3.19	19	60	5	29	40.1	4.89

Table showing the range of the thermometer &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
MASS.—Contin'd.		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Worcester	25	51	5	-10	26.2	4.36	12	63	29	25	40.0	4.68
Lunenburg	25	52	5	-14	23.8	3.10	12	63	29	23	40.0	3.75
Mendon	25	53	5	-8	29.1	3.10	19	59	29	24	39.6	4.80
Amherst	25	51	5	-10	26.0	2.91	12	61	29	25	40.5	3.99
Richmond	25	47	5	-16	24.6	4.60	17	64	5	24	37.9	.....
Williams' College	25	44	5	-15	24.1	1.50	17	62	29	23	38.4	3.02
Hinsdale	24	48	5	-19	22.5	2.65	11	60	28	22	38.0	5.17
RHODE ISLAND.												
Newport	25	52	5	-3	30.6	2.24	19, 31	58	29	28	42.1	4.67
CONNECTICUT.												
Columbia	25	50	5	-10	27.9	4.80	19	79	29	23	41.0	6.47
Middletown	25	55	5	-11	25.9	4.10	9, 19	61	8	28	41.1	6.52
Southington	25	52	5	-11	26.7	3.91	10, 19	58	29	23	40.9	5.84
Round Hill	28	51	5	-9	25.5	3.23	19	60	29	26	40.1	4.64
NEW YORK.												
Moriches	25	51	5	-4	25.9	4.13	19	59	8	20	37.7	4.51
South Hartford ..	17	48	5	-13	24.6	2.76	12	62	29	19	40.5	3.38
Garrison's	25	55	6	-5	26.0	3.11	19	62	5	32	43.0	3.71
Throg's Neck	25	50	6	-3	29.8	.....	19	66	{ 5, 8, 28, 29 }	32	43.1	.....
White Plains	1	49	5	-1	28.2	.....	19	62	16	30	44.0	.....
Cooper Union	25	54	6	3	31.8	5.78	3, 9	59	29	33	44.5	5.60
Brooklyn	25	55	5	1	31.1	3.68	19	62	29	32	45.3	5.21
Flatbush .....	.....	.....	.....	.....	.....	.....	19	62	6, 15, 24	30	41.3	5.34
Glasco	25	60	6	-5	26.0	2.15	11	65	.....	.....	.....	6.00
Newburg	25	55	6	0	28.5	2.26	.....	.....	.....	.....	.....	.....
Middleburg	25	56	5	-12	26.0	2.10	9	66	29	20	38.6	6.90
Cooperstown	18, 24	50	5	-22	22.0	1.94	17	64	29	9	37.5	5.29
Gouverneur	24	51	5	-23	19.4	1.47	9	66	29	10	34.4	4.46
North Hammond ..	2	50	5	-26	23.0	2.54	11	62	29	18	38.0	5.37
Lewville .....	.....	.....	.....	.....	.....	.....	9	60	29	10	37.0	5.11
South Trenton	25	48	5	-22	21.1	5.19	8	60	29	10	36.3	6.73
Cazenovia	24	48	5	-18	23.1	.89	17	63	29	17	37.9	.....
Oneida	24	52	5	-13	22.5	1.85	9	65	7	26	40.0	6.55
Depauville	24	52	5	-21	22.0	2.15	9	67	29	17	36.2	4.65
Oswego	24	48	5	-9	25.3	1.50	9	68	7	25	38.3	3.31
Palermo	24	49	5	-19	22.2	1.70	9	66	29	19	35.9	2.61
North Volney	24	48	5	-14	24.0	.....	9	66	7, 29	23	37.0	.....
Nichols	25	51	5	-10	25.8	.....	17	64	29	20	39.9	.....
Newark Valley	25	56	6	-16	24.6	1.30	17	64	29	16	38.9	6.20
Rochester	24	61	5	-5	28.3	2.63	8	66	24	27	41.2	2.88
Angelica	24	56	6	-6	25.7	.....	16	71	29	17	38.5	.....
Little Genesee	24	60	6	-8	25.6	2.86	15	70	6	16	36.8	4.86
Carlton	23	62	5	-4	26.0	2.08	9, 20	68	7	26	38.0	2.16
Suspens'n Bridge ..	24	58	5	-4	26.3	2.15	9	68	24	25	39.1	3.30
Lockport	24	58	5	-5	25.9	2.50	9	70	3, 23, 24	26	37.9	3.07
Buffalo	24	55	5	-2	27.7	2.14	9	72	7	25	39.3	3.74
Jamestown	24	56	5	0	27.6	2.48	8	66	7	18	36.0	3.50
NEW JERSEY.												
Jersey City	25	55	5	-2	30.2	.....	19	71	29	32	45.3	4.91
Paterson	25	55	5, 6	-2	30.1	3.29	18	64	8, 29	30	43.5	3.99
Newark	25	51	5	1	28.7	3.05	19	63	29	28	43.0	4.99
South Orange	25	53	5	-3	28.0	3.33	19	64	8, 29	29	42.8	4.03
Trenton	25	60	5	6	33.0	4.07	9	71	8	34	48.0	5.50
Rio Grande	25	69	6	6	33.9	4.00	23	72	4, 23, 29	32	44.6	7.88
Moorestown	25	61	6	2	31.3	3.50	17	75	8	31	45.4	4.39
New Germantown ..	25	52	5	-1	27.9	2.30	19	62	20	29	42.2	5.15
Readington .....	.....	.....	5, 6	4	.....	.....	.....	.....	7, 29	30	.....	.....
Greenwich	25	67	6	7	34.8	4.44	17	74	5	31	47.3	6.68
Vineland	25	69	6	6	35.6	3.75	17	74	5	29	46.2	6.33

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
PENNSYLVANIA.												
Nyces	23	Deg. 50	5	Deg. — 8	Deg. 24.2	In. 3.04	17	Deg. 62	5, 7, 13, 28	Deg. 26	Deg. 30.3	In. 6.49
Hamilton	23	52	5, 6	— 4	28.1	1.55	11, 17	60	4, 28	28	31.3	5.31
Dyberry	25	45	5	— 12	22.7	1.96	9, 11	56	29	13	35.8	5.78
Fallsington	25	57	6	5	31.0	3.50	9	70	29	30	45.0	5.40
Philadelphia	25	60	6	9	34.3	3.20	17	72	5, 20	36	47.6	5.77
Germantown	25	60	6	— 1	33.3	.....	19	73	28	30	45.4	.....
Do .....	.....	.....	.....	.....	.....	.....	17	72	.....	.....	.....	.....
Horsham	25	50	6	2	30.5	3.50	9	71	5, 8	31	45.2	6.64
Plym'th Meeting	25	56	6	3	30.2	2.82	9	67	29	31	45.3	4.40
Egypt	25	58	6	— 2	29.9	.....	11, 19	63	29	24	42.7	.....
Factoryville	25	51	6	— 13	24.9	2.40	23	62	29	29	30.4	6.87
Reading	25	55	6	5	33.8	5.83	3	67	5, 29	33	47.4	6.25
West Chester	25	58	6	1	29.9	2.35	9	72	25	28	44.7	5.88
Parkerville	16, 18, 25	48	6	3	30.7	3.22	9, 17	71	29	28	45.5	5.42
Ephrata	25	55	6	— 1	30.2	2.24	9, 17	68	3	31	44.5	6.59
Do	18, 25	51	6	— 2	30.9	.....	17	75	7	30	43.4	4.25
Mount Joy .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carlisle	25	59	6	2	31.2	2.55	10	82	7, 29	31	48.0	3.89
Fountain Dale	20	50	6	4	32.8	3.85	23	69	7	32	46.2	5.20
York Sulpr'sPg's	20	52	6	1	32.1	2.60	3	68	5	30	44.9	6.10
Tioga	24	56	5, 6	— 6	26.0	1.60	17	66	29	12	39.1	5.43
Grampan Hills	24	52	6	— 10	24.0	2.43	16	68	7, 20	16	36.3	2.73
Johnstown	24	55	6	3	32.2	.....	15	80	12	16	44.1	2.70
Franklin	24	65	6	3	37.6	2.48	16	75	7, 29	20	41.2	3.40
Pittsburg	24	65	6	11	35.0	3.10	16	79	7	29	48.5	1.30
Connellsville	24	62	6	12	35.2	.....	16	80	25	24	47.8	.....
Brownsville	24	63	6, 15	10	35.0	.....	16	80	7	26	48.0	.....
New Castle	24	63	6	5	31.4	1.30	16	72	25	20	45.0	1.80
Beaver	24	64	6	11	34.1	.....	16	77	14, 25	26	45.4	.....
Canonsburg	24	70	6	9	35.2	1.87	8	78	25	22	46.7	1.92
DELAWARE.												
Dover	25	68	6	10	36.5	3.50	17	74	5	32	49.3	6.50
Milford	25	72	6	9	36.3	1.90	17	77	5	23	48.9	6.90
MARYLAND.												
Woodlawn	25	65	6	2	31.4	2.14	9	70	5	29	44.9	7.33
Fallston	25	64	6	4	34.9	3.20	23	71	{ 4, 5, 7, 25, 29 }	32	46.2	6.44
St. Inigo's	24, 25	60	6	13	37.2	2.76	.....	.....	.....	.....	.....	.....
Woodstock Col	25	64	6	4	33.1	2.84	9	68	7	29	45.5	5.70
Mt. St. Mary's	25	58	6	5	32.5	3.15	23	68	7	30	45.9	6.23
DIST. OF COLUMBIA.												
Washington	25	61	6	13	37.5	3.75	17	69	7	35	49.2	5.39
VIRGINIA.												
Johnsontown	26	74	6	16	41.8	4.00	16, 17	76	5, 7	35	52.4	6.65
Capeville	26	76	6, 7	20	45.5	.....	16, 17	78	4, 5, 31	40	55.8	.....
Hampton	26	78	7	16	44.3	3.75	17	78	5	33	54.0	7.35
Surry C. H.	30	74	7	12	44.4	.....	16	87	5	30	56.0	10.05
Comom	25	66	6, 7	13	38.3	2.34	23	76	5	31	52.4	5.06
Mt. Solon	24, 25	62	7	0	36.1	1.25	.....	.....	.....	.....	.....	.....
Vienna	25	69	6	12	37.5	3.20	.....	.....	.....	.....	.....	.....
Accotink	25	65	6, 15	15	34.4	.....	15	70	5, 7, 25, 29	39	45.2	7.10
Piedmont	25	70	6	10	37.2	2.30	23	75	29	29	48.1	4.85
Piedmont Station	25	70	15	6	36.0	2.40	17	76	7, 29	24	46.5	4.80
Markham Station	25	66	6	12	37.6	2.75	22	75	7	31	50.3	5.10
Keswick Station	20, 25	60	7	12	39.4	.....	17	79	7	30	53.3	.....
Staunton	25	69	7	10	39.2	3.45	16	75	7, 29	29	49.3	3.00
Lexington	20	64	7	— 3	37.5	4.18	15	80	7	24	47.1	4.86
Lynchburg	20	63	7	20	42.9	4.65	17	74	5, 29	36	53.7	5.75
Near Wytheville	26	60	15	14	40.5	2.85	8	72	5	28	43.6	4.05

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
NORTH CAROLINA.												
		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Goldsboro.....	26	82	7	23	50.4	4.90	3, 16	84	2	36	60.5	5.85
Oxford.....	26	72	7	22	43.0	5.35		78	23	23	56.0	7.70
Fayetteville.....	26	78	.....	.....	.....	.....		80	38	38	58.2	8.85
Albemarle.....	26	73	7	20	45.5	5.09		83	5	26	54.5	5.61
Statesville.....	.....	.....	.....	.....	.....	.....	15, 22, 23	76	23	30	47.7	6.25
Asheville.....	25	65	15	27	44.2	3.21	14, 15	69	5	30	50.7	5.30
Do.....	25	70	10, 28	28	44.3	.....	15	74	5	23	51.0	.....
SOUTH CAROLINA.												
Aiken.....	25	77	.....	.....	.....	3.72	16	82	1, 5	42	60.4	3.14
Gowdeysville.....	4, 20	64	7	30	.....	4.57	15	78	5	32	58.2	5.13
GEORGIA.												
Berne.....	26	77	20, 28	36	56.3	1.95	26	78	1	36	60.1	7.40
St. Mary's.....	2	86	20, 28	38	61.2	1.07	12, 16	82	1	40	64.3	6.57
Quitman.....	17, 25	77	19	39	60.8	4.50	15	81	5	40	64.2	10.50
Atlanta.....	12, 20	69	3, 28	32	47.3	5.81	15	79	1, 29	38	55.0	5.37
Macon.....	.....	.....	.....	.....	.....	.....	15	80	1, 5	40	59.3	5.40
ALABAMA.												
Rockville.....	21, 25	74	3	23	52.6	3.94	.....	.....	.....	.....	.....	.....
Carlowville.....	25	78	15	34	56.5	6.73	14, 15	80	4	38	60.0	13.00
Selma.....	25	77	15	34	57.7	5.70	16	80	4	41	62.0	7.85
Moulton.....	25	72	14	32	50.9	4.09	14, 15	74	4	38	56.7	6.57
Greene Springs..	26	76	15	29	51.7	7.90	14, 15, 19	79	1	31	58.0	8.35
Coatopa.....	25	78	15	31	54.8	5.40	14, 15, 19	80	4	36	59.8	6.80
FLORIDA.												
Near Port Orange	12, 13	84	20	32	62.8	0.95	27	87	7	45	67.3	3.38
Jacksonville.....	26	84	23	43	64.0	1.83	16	87	1	42	67.6	7.15
Platka.....	26	90	19	40	66.9	1.24	24, 26	88	1, 5	46	62.5	6.80
Newport.....	25	75	4, 19	38	60.0	6.35	24	79	5	39	62.5	11.85
TEXAS.												
Clarksville.....	28	74	13	32	55.9	.....	19	82	3	43	62.1	.....
Houston.....	25	83	1	32	58.8	.....	11, 23, 24	89	4	38	65.2	.....
Galveston.....	21	84	14	34	61.0	.....	25	86	4	44	64.3	2.30
Oakland.....	21, 24	78	1	30	59.8	2.05	13	83	4	38	65.0	1.75
Sand Fly.....	24	76	1, 12	32	54.4	3.50	12, 19	82	4	42	62.9	1.20
Bluff.....	15	76	1	32	59.1	1.42	11	86	4	42	64.7	2.07
Clinton.....	21	79	1	31	60.1	0.80	11, 22	81	3	45	64.5	1.80
Austin.....	21	80	14	31	57.1	1.41	18	83	4	43	63.1	2.13
LOUISIANA.												
New Orleans.....	12	82	19	36	61.0	1.20	19, 21	80	4, 5	42	63.0	4.55
Ponchatoula.....	6	82	19	36	62.7	4.35	18	85	4	40	65.6	6.35
MISSISSIPPI.												
Columbus.....	25	77	14	33	52.9	8.47	14, 19	76	4	37	58.1	10.49
Philadelphia.....	25	74	14, 15	32	54.7	8.30	19	79	4	36	59.2	5.40
Near Brookhaven..	24, 25	80	14	35	55.6	5.30	14	82	21	40	62.0	9.70
Clinton College..	25	76	14	33	55.7	8.03	14	81	4	44	60.7	11.38
Holly Springs....	27	74	5	27	54.0	7.00	20	78	23	34	56.0	15.80
ARKANSAS.												
Helena.....	20	78	3	24	51.6	.....	14	86	17	33	56.2	.....
Clarksville.....	20, 22, 23	72	14	22	46.7	.....	19	82	4	31	55.6	.....
Mineral Springs..	23	72	14	26	49.1	2.50	14, 19	78	16	34	56.9	7.31

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
TENNESSEE.												
Elizabethton.....	24, 25	Deg. 70	10, 28	Deg. 25	Deg. 41.9	In. 2.85	15	Deg. 82	5	Deg. 28	Deg. 51.4	In. 4.25
Tusculum College.....	25	68	10	25	45.6	2.50	16	77	5	29	52.2	3.40
Lookout Mount'n.....	21	68	10, 14, 27	33	47.3	.....	15, 19	75	24	35	54.5	.....
Clearmount.....	25	70	3	26	45.0	3.60	19	76	24	35	53.0	5.74
Austin.....	25	74	3	24	46.2	6.72	19	78	28	31	54.8	6.37
Clarksville.....	21	69	13	27	45.7	6.51	19	78	4, 23	33	53.0	9.78
Trenton.....	22	72	13	29	49.9	3.00	19	75	4	31	56.6	8.20
La Grange.....	22	74	13	30	47.0	5.50	19	78	17	35	55.3	12.80
KENTUCKY.												
Pine Grove.....	23	65	3, 10	20	38.9	4.91	16	78	{ 4.5, 18, 25, 28 }	30	51.5	3.39
Danville.....	24	68	10	26	43.0	4.63	8, 15	76	4	32	52.8	3.77
Shelby City.....	20	67	10	23	42.4	4.63	15	76	4	32	51.9	4.19
Near Louisville.....	23	67	3, 6, 10	23	39.5	5.74	15, 19	77	28	28	50.7	7.29
OHIO.												
Salem.....	24	66	6	4	30.8	1.50	16, 20	79	25	20	43.2	1.55
New Lisbon.....							16	75	14	23	43.2	2.39
Steubenville.....	24	63	6	13	35.0	1.82	16	78	7	26	48.0	1.02
Martin's Ferry.....	24	70	6	9	34.3	.....					
Painesville.....	24	62	5, 6	6	25.5	3.30	8, 20	68	4	28	41.9	3.50
Milnersville.....							20	73	29	27	.....	.....
Cleveland.....	24	64	6	6	29.0	2.07	20	75	4, 13, 24	26	41.4	3.92
Wooster.....	24	68	6	8	33.3	.....					
Pennsville.....	24	66	8	12	33.1	3.21	15	78	25	28	47.4	1.10
Gallipolis.....	23, 24	68	15	9	37.0	2.67	16	79	25	26	51.5	1.88
Oberlin.....	24	64	6	6	28.8	1.20	8, 16, 20	70	13	13	41.0	2.45
Kelley's Island.....	24	58	6	9	29.8	2.60						
Sandusky.....	24	64	6	10	31.2	2.73	16, 20	70	27	24	42.6	2.75
Carson.....	24	63	6	8	33.0	1.66	20	70	22	31	45.9	2.05
North Fairfield.....	24	64	5, 6	8	31.1	1.71	20	72	29	28	44.9	2.16
Gambier.....	24	57	6	9	30.4	2.80	15	69	25	28	44.2	2.53
Mount Gilead.....												
Westerville.....	24	64	6	13	34.1	1.50	15	73	28	30	47.1	3.06
Williamsport.....	25	77	6	15	33.7	2.74	16	81	25	23	40.4	4.52
North Bass Isl'd.....	24	58	5	8	29.1	3.40	8	66	22	29	40.2	2.88
Marion.....	24	61	6	7	30.2	1.84	16	69	25	27	44.7	3.53
Hillsboro.....	24	62	13	14	34.4	3.56	15	71	25, 29	30	47.5	3.42
Bowling Green.....	24	65	13	8	33.0	3.38	15, 18, 30	71	25	27	47.0	2.45
Kenton.....	24	52	6	2	32.1	3.33	8	69	29	31	44.5	6.91
Bellefontaine.....	24	62	6	7	30.2	2.51	15	69	25	25	43.9	3.57
Urbana Univ.....	24	65	6	9	33.2	1.85	15	74	3	28	46.9	2.74
Bethel.....	23, 24	65	6	18	35.6	3.13	15	77	4	30	36.4	2.88
Carthage.....	24	66	6	8	33.2	3.65	15	73	4, 24	29	46.5	5.05
Jacksonburg.....	23	64	6	16	33.4	3.84	20	74	25	23	47.4	4.27
Oxford.....	23, 24	64	6, 10	14	32.2	3.63	15	74	4	22	45.6	4.71
Mt. Auburn Inst.....	23	66	6	15	37.0	4.65	15	76	4	30	49.2	3.84
Cincinnati.....	23	68	6	16	36.6	.....	8, 15	71	4	31	49.0	3.57
Do.....	24	69	6	18	36.7	5.10	15	80	12	31	49.6	4.30
College Hill.....	24	66	6	12	33.8	3.95	15	75	4	28	46.6	3.18
MICHIGAN.												
Detroit.....	24	68	6	2	27.5	3.11	8	66	22	24	40.5	3.02
Monroe City.....	24	67	13	0	29.8	1.05	2	68	28	29	43.5	3.25
Ann Arbor.....	24	61	5, 6	5	23.7	2.89	8	67	22	26	40.8	2.15
Macon.....	24	64	13	—	24.8	2.55	8	72	28	28	42.5	1.90
Alpena.....	24	40	5	2	23.1	1.40	5, 9, 10, 29	40	19	22	33.0	1.94
State Agr'l Col.....	24	57	6	—	25.7	1.73	8	70	4, 25	23	38.2	3.31
Olivet College.....	23	52	6	—	25.2	2.92	8	67	22, 25	22	38.6	3.88
Litchfield.....	23	55	6	2	27.3	2.20	8, 15	69	4	24	39.3	3.80
Coldwater.....	15	48	6	4	26.6	1.63	8, 16	68	22	20	39.4	1.25
Grand Rapids.....	23	50	6	2	26.9	1.50	8	72	22	24	34.1	2.74
Do.....	23	52	6	4	27.6	1.44	8	68	4	24	37.9	3.56
Northport.....	24	46	5	2	24.3	1.67	25	51	19	21	32.8	3.58
Benzonia.....	16	51	11	0	25.9	1.79						
Copper Falls.....	24	42	2	—	14.2	3.70	9, 25	43	1	5	25.9	3.20
Ononagon.....	22	46	11	—	19.0	0.50	31	44	24, 28	10	28.4	2.40

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
INDIANA.												
		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Fort Wayne	23	64	10	2	29.4	2.75	8	75	4	20	42.3	2.75
Aurora	23	62	6	18	36.0	4.13	15	79	4, 7, 25	30	46.7	5.66
Vevay	23	67	6	21	37.7	4.39	15	78	4	30	50.3	4.74
Mt. Carmel	23, 24	62	10	15	31.5	4.08	13, 19	70	4	28	46.7	1.85
Spiceland	23	66	10	11	33.5	3.39	15	73	4	24	46.5	3.57
Laconia	23	66	3	22	39.6	6.55	14, 22	76	4	28	50.3	7.32
Columbia City	23	62	9, 10	4	32.7	1.39						
Knightstown	24	65	10	10	33.5	3.01	15	74	4	23	47.0	3.20
Indianapolis	24	65	10	12	35.2	2.35	15	73	4	26	47.6	3.08
Bloomington	24	66	10	17	35.6	.....	19	72	4	26	47.2	3.62
Near La Porte	24	60	10	2	30.8	1.40	15	72	4, 21, 22	30	43.2	3.20
Rensselaer	23	62	10	3	22.5	4.05						
Merom	23	67	12	14	38.0	.....	15	76	4	31	50.4	3.90
New Harmony	24	68	10	24	40.9	4.89	19	79	4	29	51.4	6.06
ILLINOIS.												
Chicago	23	56	10	2	30.5	2.22	8	72	{ 1, 2, 3, 12, 20, 21 }	32	42.7	2.27
Near Chicago	23	52	10	-1	29.7	.....	15	76	12	28	42.4	.....
Evanston	23	49	10	-3	28.3	1.96	8	64	21	29	39.4	2.43
Marengo	24	45	10	11	23.4	1.30	8	65	19, 28	23	36.6	2.23
Charleston	20	61	10	13	35.3	2.88	19	74	4	25	46.2	2.10
Mattoon	23	60	10	14	35.5	3.00						
Aurora	23	50	10	-10	25.5	.....	15	69	1, 6	29	40.9	3.04
Louisville	23, 24, 25	64	10	20	38.4	5.00	14	74	21, 24	26	50.2	3.50
Belvidere	23	48	10	-16	23.8	1.67	8, 15	67	13	25	38.2	1.95
Decatur	26	62	9	14	34.6	1.65	19	74	6, 16	28	44.7	3.05
Pana	23	62	10	12	34.0	2.50	19	76	5, 12	30	46.3	.....
Rochelle	23, 28	50	10	-13	27.3	.....	15	73	3, 12	26	40.0	.....
Wyanet	23	56	13	-10	27.3	2.00	15	70	3, 21	27	41.5	2.72
Tiskilwa	23	56	10	-6	29.1	.....	15	74	24	24	42.6	.....
Hennepin	23	58	10	-2	29.0	.....	8, 15	72	24	26	42.0	.....
Do	23	55	9	1	28.5	2.40	8, 15	70	3, 24	29	43.7	3.20
Peoria	23	66	10	6	32.0	1.62	15	73	6, 24	30	45.8	3.24
Havana	23	68	13	-6	31.6	1.60	19	78	6	25	46.4	4.25
Waterloo	23, 24	68	10	16	38.3	2.11	19	77	17	30	45.3	1.75
Dubuois	23	66	2, 10	19	40.4	4.60	19	78	3	27	49.7	2.75
Galesburg	23, 28	55	13	-10	28.8	1.50	15	70	3	25	43.5	2.05
Manchester	16, 23	68	13	5	34.2	1.55	14	84	6	23	47.7	4.40
Mt. Sterling	23	69	13	8	35.0	2.80	19	75	3	30	47.4	4.10
Andalusia	23	56	13	-10	29.5	.....	15	69	3, 6, 11	23	40.4	.....
Oquawka	23	63	13	-8	30.9	3.02	15	72	3	26	44.7	1.96
Augusta	23	73	13	-8	32.1	1.59	7, 15	73	3, 6	25	44.9	3.85
Warsaw	23	73	13	-12	31.1	2.21	7	73	3, 6	26	44.5	3.51
WISCONSIN.												
Sturgeon Bay	23, 24	46	11	-9	22.9	1.20	29	51	24	14	32.8	3.35
Manitowoc	28	48	10	-4	25.7	0.64	30	48	1	20	35.0	4.84
Hingham	23, 24	48	10	-1	25.6	.....	23	54	1	20	35.8	.....
Milwaukee	23, 24	49	10	-2	28.7	1.32	8	48	1	24	36.0	2.75
Appleton	23, 24, 28	49	10	-1	26.4	.....	8	59	1	20	36.5	.....
Geneva	23	47	10	-14	23.4	1.30	15	60	1, 12, 13	24	36.2	2.06
Waupaca	23, 27	48	11	-8	25.0	.....	8	58	1	15	35.8	.....
Embarrass	24	52	.....	.....	25.4	1.50	8	58	24	10	33.6	4.36
Rocky Run	23	52	11	-4	25.2	1.50	8	64	1	20	38.7	4.44
Madison	23, 28	46	10	-4	23.7	1.43	8	60	1	20	35.4	2.96
Edgerton	23	50	10	-4	25.9	1.70	8	62	2	20	38.8	1.52
Mosinee	23	46	10	-14	18.5	2.86	8	54	1	5	29.9	11.33
Baraboo	23	54	10, 11	-2	25.7	5.00	8	60	1	20	35.6	5.75
New Lisbon	23	56	11	-8	25.7	.....	8	64	1	18	37.8	.....
Tunnel City	23	54	10, 11	-10	24.2	4.58	29, 30	54	1, 6	10	32.7	3.25
Bayfield	23	42	11	-20	15.5	.....	29	52	1	12	29.2	.....
MINNESOTA.												
Beaver Bay	16	42	11	-20	17.0	1.84	.....	.....	.....	.....	.....	.....
St. Paul	23	44	10	-14	20.7	0.65	29	54	3	7	32.3	2.57

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
MINNESOTA—Con.		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Minneapolis	3	44	10	—24	17.9	0.23	25	51	3	3	30.1	4.05
Leech Lake	22	37	9, 12	—20	15.2	.....	28	50	3, 13	0	25.6	2.38
Koniska .....	.....	.....	.....	.....	.....	.....	7, 31	54	3	—	30.5	2.60
Sibley	23	47	12	—17	19.2	0.43	25	54	3	—	31.0	1.05
Litchfield	24	39	10	18	18.4	0.78	7, 25	56	1, 3	2	29.8	1.80
New Ulm	4, 23	44	12	—11	20.0	0.44	29	52	3	3	31.8	1.12
Oak Lake	22	40	10	—14	17.2	0.65	.....	.....	.....	.....	.....	.....
IOWA.												
Clinton	20	68	10, 13	—10	28.0	1.20	8	68	24	26	41.8	4.50
Dubuque	23	54	13	—3	27.5	1.55	15	67	1	27	39.0	3.32
Monticello	23	56	13	—12	26.4	3.00	15	70	3	18	38.5	3.40
Durant	23	54	13	—9	26.7	1.70	15	68	3	22	38.7	2.05
Bowen's Prairie	23, 35	54	10	—12	26.0	2.40	15	72	3	16	38.1	2.25
Fort Madison	22	59	13	—8	30.2	2.57	15	73	3	24	43.4	2.10
Guttenberg	24, 28	46	13	—10	25.1	.....	8	56	3	4	34.2	.....
Mount Vernon	23	52	9, 13	—8	25.6	.....	7, 8	57	3, 13	19	37.2	.....
Iowa City	23	53	13	—13	26.2	3.10	15	67	3	20	42.3	5.36
Independence	23	51	10	—10	24.8	2.45	15	70	3	16	36.7	1.65
Near Independence	23	55	10, 13	—11	24.1	2.95	7	62	3	16	36.5	1.80
Rockford	23	50	10	—5	23.0	.....	7	61	3	16	36.6	0.85
Iowa Falls	23	58	12	—10	25.3	5.59	7, 25	62	3	18	38.0	1.13
Algona	23	50	12	—14	21.2	1.05	7, 29	62	3	15	34.2	.....
Webster City	23	54	10, 12	—10	24.2	1.99	.....	.....	.....	.....	.....	.....
Boonesboro	23	63	9, 10	—8	24.4	3.05	7	67	3	20	35.5	2.24
Afton	23	56	10	—4	26.6	1.99	.....	.....	.....	.....	.....	.....
Fontanelle	23	68	9	—7	27.5	4.10	14	74	23	20	39.0	2.18
Grant City	23	58	12	—17	24.3	2.60	7	72	16	20	37.8	0.45
Sac City	23	55	12	—12	22.9	5.00	7	69	16, 21	20	34.8	0.80
Logan	23	68	12	—11	28.2	3.10	14	82	27	17	39.1	.....
Le Mars	23	62	12	—30	23.3	.....	.....	.....	.....	.....	.....	.....
Woodbine	23	69	8	—8	27.7	1.12	.....	.....	.....	.....	.....	.....
West Union	23	55	10	—11	26.6	1.51	.....	.....	.....	.....	.....	.....
MISSOURI.												
St. Louis	23	72	10	20	40.4	2.84	19	79	3	34	50.9	1.41
Allenton	23	74	13	15	39.0	4.21	19	84	17	26	49.4	1.93
Hematite	23	75	1, 10	21	42.5	3.63	19	82	4	26	51.5	2.04
Hannibal	23	72	13	—4	33.6	2.80	7	75	3	23	45.6	4.80
Rolla	19, 22	70	14	10	40.4	2.86	19	81	17	25	50.4	2.31
Keytesville	19, 20	65	13	—5	35.1	.....	7, 22	78	3	22	47.0	.....
Jefferson City	23	70	13	7	41.0	.....	7	76	3, 17	30	51.0	.....
Willard	22	73	9	10	40.4	2.74	.....	.....	.....	.....	.....	.....
Cave Spring .....	.....	.....	.....	.....	.....	.....	18	80	27	19	49.2	3.19
Kansas City	19	68	13	—2	35.0	1.14	7	75	27	26	46.0	2.33
Oregon	23	70	9, 10	0	32.8	3.11	14	81	16	22	44.1	0.56
Corning	23	72	13	—3	32.7	1.93	14	80	16, 27	20	43.5	0.45
KANSAS.												
Atchison	23	74	13	—10	33.4	2.40	14	89	23, 27	24	45.8	1.20
Williamstown	20	74	13	—4	38.5	4.30	14	80	3, 16, 20	26	46.6	1.70
do	20	75	13	—5	38.5	4.57	21	84	3	25	50.7	1.20
Leavenworth	23	70	13	—9	33.8	2.89	14	78	3, 16	24	46.0	1.56
Olathe	22, 23	70	12	—3	35.1	1.60	14	78	3	24	45.3	2.85
Paola	23	76	13	—16	36.7	1.73	21	78	3	24	48.5	1.75
Baxter Springs	22	72	13	14	43.4	2.60	18	80	3, 27	30	51.8	2.10
Lawrence	22, 23	72	13	—6	35.3	2.43	14	78	3, 16	26	47.4	1.73
Holton	23	72	12	2	32.9	.....	14	82	16	22	44.2	1.13
Le Roy	22, 23	72	13	—7	38.9	3.41	18	82	3	27	51.3	2.47
Burlington .....	.....	.....	.....	.....	.....	.....	14	80	3, 16	25	48.9	1.25
State A & I College	23	71	12, 13	3	36.0	2.48	14	83	16	22	47.2	1.02
Council Grove	23	72	13	—10	36.5	3.10	14	80	3	20	47.3	1.10
Douglas	20	74	13	—6	39.7	2.15	14	85	16	25	51.5	1.10

Table showing the range of the thermometer, &c., for February and March—Continued.

Stations in States and Territories.	FEBRUARY.						MARCH.					
	Date.	Maximum tempera- ture.	Date.	Minimum tempera- ture.	Mean temperature.	Rain and melted snow.	Date.	Maximum tempera- ture.	Date.	Minimum tempera- ture.	Mean temperature.	Rain and melted snow.
KANSAS—Cont'd.												
Plum Grove.....	22	Deg. 60	13	Deg. —11	Deg. 30.6	In. 1.65	.....	Deg. ....	.....	Deg.	In. ....	.....
Girard.....	23	72	13	4	39.1	3.30	.....	.....	.....	.....	.....	.....
Burlingame.....	20	70	13	3	34.0	.....	14	82	16	21	45.9	.....
NEBRASKA.												
Omaha agency...	22	63	12	— 9	31.1	1.00	14	80	16	16	41.9	.....
De Soto.....	23	67	12	—13	23.3	1.37	14	81	16	18	40.6	0.82
Bellevue.....	23	70	12	— 8	31.5	1.60	14	85	16	22	42.8	0.49
Nebraska City...	23	72	12	—10	30.1	1.30	14	84	16	19	42.3	0.21
New Castle.....	3	70	7, 10, 25	0	25.5	0.50	.....	.....	.....	.....	.....	.....
UTAH.												
Coalville.....	18	49	25	— 5	27.8	1.55	12	56	2	1	37.5	.....
Camp Douglas...	27	53	8, 25	19	32.5	2.44	12	64	2	19	38.7	3.57
CALIFORNIA.												
Monterey.....	2, 26	61	23	37	43.2	2.64	31	77.5	3, 22	38	53.0	0.31
Chico.....	4	68	16, 24	34	47.3	3.65	31	81	21	38	55.0	0.90
Watsonville.....	4	70	2, 23	32	49.9	5.45	29	83	18	29	52.6	0.40
Cahto.....	2	64	22	35	46.0	10.60	.....	.....	.....	.....	.....	.....
Visalia.....	13	70	23	29	47.2	1.56	30, 31	83	14	32	55.0	.....
Taylorville.....	26	67	{ 3, 12, 23, 24 }	28	41.9	.....	{ 11, 15, 19, 25 }	64	28	32	48.7	.....
San Diego.....	23	70	17	39	51.9	1.35	.....	.....	.....	.....	.....	.....
MONTANA.												
Deer Lodge City.	26	52	11	—31	23.5	0.88	31	55	22	8	32.5	1.30
Miesoula.....	21	51	11	— 4	29.5	0.00	30	55	10	22	37.1	1.47
Virginia City....	19	49	11	—10	24.5	.....	12	56	10	6	33.5	2.00
WASHINGTON.												
Cathlamet.....	26	54	11	28	40.2	.....	30	68	29	32	44.3	.....
Port Angeles.....	17, 25, 26	48	8, 11, 12	37	43.2	10.87	.....	.....	.....	.....	.....	.....
COLORADO.												
Denver City.....	20	66	1	13	38.5	0.23	13	63	9	10	46.0	1.81
Colorado City....	21	72	2, 12	9	37.1	0.55	13	76	2	15	44.9	0.71
Golden City.....	21	70	11	12	41.1	1.00	13	72	15	20	43.0	1.40
OREGON.												
Portland.....	26	58	11	23	43.0	5.06	31	69	18	33	47.0	9.24
Eola.....	25	49	11	25	37.3	4.32	30	62	29	30	41.6	7.51
Astoria.....	3, 26	49	11	31	40.2	10.88	30	61	18, 29	35	44.0	16.21

NOTES OF THE WEATHER.

FEBRUARY, 1871.

Orono, Me.—Auroras 10th, 11th, 13th, 15th, 21st.*Williamsburg, Me.*—Auroras 10th, 11th; mean heat of winter 12.45° .*West Waterville, Me.*—Auroras 10th, 11th, 21st; wells and streams low.*Gardiner, Me.*—Month $2^{\circ}.06$ warmer than February average of thirty-five years, and 1.55 inches less moisture than average of same period.*Standish, Me.*—Wheeling till 8th; good sleighing 15th; snow gone 24th.*Oxford, Me.*—Dry winter; little good sleighing; streams low.*Cornish, Me.*—Winter like March and April; February, 19 inches snow.*Strafford, N. H.*—Very cold 4th, 5th; snow on fifteen days, 20.75 inches.*Tamworth, N. H.*—Ground bare 28th; wells low or dry.*Contoocookville, N. H.*—Thaws 1st, 25th; hard winter on grass fields.*Goffstown Center, N. H.*—Warm 23d to 28th; many wells still dry.*Lunenburg, Vt.*—Month cold and clear; March less snow than usual.*East Bethel, Vt.*—Smallest amount of sleighing in fifty years.*Woodstock, Vt.*—Drought partly relieved by rain and snow of 18th.*Georgetown, Mass.*—Sky nearly cloudless for seventy hours 4th to 7th.*Mendon, Mass.*—Bright aurora 10th; snow gone; roads muddy; wells rising.*Lunenburg, Mass.*—Severe wind and cold 3d, 4th, 5th; sleighing 13th to 17th.*Southington, Ct.*—Southeast wind melted the snow and caused freshet 18th; bluebirds 25th; mean heat of the winter $27^{\circ}.17$.*Garrison's, N. Y.*—Month cold; much snow; ice yet on the Hudson.*Cooperstown, N. Y.*—No heavy storms of snow, rain, or wind; only ten days sleighing; winter mean heat 3° below last winter.*North Hammond, N. Y.*—Month mild, open; coldest day of winter 5th.*South Trenton, N. Y.*—Snow (23.72 inches) on fourteen days; changeful month.*Middleburg, N. Y.*—Streams low; only five days good sleighing.*Depauville, N. Y.*—February mean $2^{\circ}.5$ above the last, and 1° above the average of seven years; pleasant month, except a few days.*Palermo, N. Y.*—The winter was 22° warmer than average of seventeen winters; snow-fall this winter was 45.75 inches.*Buffalo, N. Y.*—Month 1° above average of thirteen years; very changeable, and two days sleighing; winter rough, stormy, but not very cold.*Newark, N. J.*—Month 2° below average; of twenty-seven Februaries only seven were colder; less snow, rain, and winds than usual.*South Orange, N. J.*—Auroras 10th, 21st, 22d; sleighing from 23d ultimo ended by rain 18th; traveling heavy.*Carlisle, Pa.*—Coldest morning in two years 6th; robins, bluebirds, 23d.*Fountain Dale, Pa.*—Bluebirds; snow and frost gone 28th.*Tioga, Pa.*—Snow gone; ice out of the river 28th.*Grampian Hills, Pa.*—Good roads, and fine month for out-door work.*Connellsville, Pa.*—Crows 23d; frogs heard; bluebirds 26th.*Brownsville, Pa.*—Pleasant month; much plowing done.*Beaver, Pa.*—Month nearly 4° warmer than in 1870.

Milford, Del.—Brilliant aurora 10th; wells rising 20th; pleasantest day 25th.

Woodlawn, Md.—Ice leaving the Susquehanna 24th to 28th; snow visible all month, and 14.2 inches fell in the month, but very little sleighing.

Hampton, Va.—Robins 1st; crocus 23d; willow in leaf 25th; frogs 28th.

Surry, Va.—Month wet, cloudy; little farm work done; coldest winter day December 25, warmest 26th inst.

Piedmont, Va.—Distant thunder, frogs, doves cooing, 25th; no snow, roads good, springs low for the season.

Lynchburg, Va.—Bright aurora 12th; nearly a foot of snow this month.

Wytheville, Va.—Blue birds 11th; bright aurora 12th; doves cooing 20th; thunder and lightning, frogs, 21st; snow 22d, 27th.

Albemarle, N. C.—Wet month, no snow; crocus and daffodil 28th.

Unionville, S. C.—Thunder and lightning 5th; frogs 23th.

Berne, Ga.—Thunder and lightning 9th, 13th, 24th, 26th; destructive gale and drenching rain 18th; frost 28th.

Quitman, Ga.—Thunder-storms 1st, 12th, 13th, 26th; heavy wind and rain storms 17th.

Rockville, Ala.—Thunder 5th, with lightning 12th; Chickasaw plum blossoms 20th, peach tree 23d.

Coatopa, Ala.—Frost, ice, 15th; peach and plum blooming 18th.

Moulton, Ala.—Month mild and pleasant, last days summer-like, frosts 15th and 19th; rains sufficient.

Jacksonville, Fla.—Mean heat of month about 2° above average, rainfall below average, vegetation forward.

Sand Fly, Tex.—Heel flies 22d; peach and plum trees in full bloom 26th.

Bluff, Tex.—Thunder and lightning 6th; peach blossoms 15th, leafing 28th; plum blossoms 20th; red mulberry leafing 16th.

Clarksville, Tex.—Vegetation forward, but too wet for farming.

Austin, Tex.—Frost 1st, 14th; peach blossoms 15th, plum 21st.

Ponchatoula, La.—Blackberry and wild apple in bloom, mocking birds nesting, young figs plentiful, 28th.

Brookhaven, Miss.—Doves 3d; green lizards 17th; toads 20th; large butterflies 22d; only white frost this month, 28th.

Helena, Ark.—Tornado with thunder and lightning, destroyed lives and houses, 17th.

Clarksville, Ark.—Frogs 4th; frost 13th; wind and rain storms 23d.

Elizabethton, Tenn.—Thunder-storm 5th; tree toad 20th; freeze 28th.

Greenville, Tenn.—Remarkable thunder-storm 5th and 6th.

Shelby City, Ky.—Frogs 19th; but little snow all winter.

Pine Grove, Ky.—Thunder showers 5th; sleet, snow, hail, 6th.

Salem, Ohio.—Auroras 3d, 10th; meadow larks 22d; robins 24th.

Painesville, Ohio.—The driest month in a very dry winter.

Cleveland, Ohio.—Robins 20th; violets 24th; ice in the river broken up 25th; February temperature for sixteen years, 29° 18; winter, 29° 16; for sixteen years, 28° 96.

North Bass Island, Ohio.—Crows 21st; bluebirds 24th; hawks 25th.

Bowling Green, Ohio.—Robins, bluebirds, 14th; no thunder-storms.

Urbana, Ohio.—Mean temperature 3° 08 above last February, and nearly 3° above the February average of nineteen years.

Jacksonburg, Ohio.—Rain, hail, sleet, 5th, 12th; snow-storm 27th.

Detroit, Mich.—Snow, heavy rain, snow, 17th, 18th; bluebirds 24th.

- Ann Arbor, Mich.*—Month open, moderate; bare ground at close.
- Litchfield, Mich.*—Robins, bluebirds, 28th. Little sleighing this month.
- Grand Rapids, Mich.*—Much sleighing (64 days) this winter.
- Northport, Mich.*—Coldest winter day 5th. Winter mild, good sleighing; earth now bare, and bay and lake open.
- Copper Falls, Mich.*—Splendid auroras 11th, 12th; sheet lightning 23d.
- Ontonagon, Mich.*—Warm, pleasant month; little ice in lake.
- Fort Wayne, Ind.*—Auroras 10th, 16th; frost out of ground, third time, 22d.
- Vevay, Ind.*—First copious rain in many months 17th; robins 24th, crocus 25th; rain all day and night 25th, 26th.
- Mount Carmel, Ind.*—First heavy rain in several months 17th, 18th.
- New Harmony, Ind.*—Thunder-storms 5th; heavy rains 16th, 17th, 25th.
- Aurora, Ill.*—Best and most sleighing in twenty years.
- Belvidere, Ill.*—Good sleighing till 23d; very high wind 24th.
- Wyanet, Ill.*—A hazy month, some days very thick.
- Hennepin, Ill.*—Thunder-shower 24th. Month mild.
- Havana, Ill.*—Thunder 5th; ice out of river 18th; robins 24th.
- Dubois, Ill.*—Bluebirds 4th; frogs 7th; all-day rain, flood, 17th.
- Mount Sterling, Ill.*—Spring birds 10th; roads drying, frost gone, 27th.
- Oquawka, Ill.*—Heavy wind and rain with lightning 24th.
- Milwaukee, Wis.*—Heavy storm—at San Francisco 20th; at Corinne, Utah, 21st; at Cheyenne 22d; at Omaha 23d; here 24th; reached Portland, Me., 25th. [In some places rain, snow, hail, attended by wind and lightning.]
- Embarrass, Wis.*—Auroras 10th, 11th, 12th, 20th, 21st, 24th, 26th.
- Tunnel City, Wis.*—Thunder-storms 23d, 24th; snow gone, freshets, 28th. Ground frozen three feet deep.
- St. Paul, Minn.*—Only cold spell of winter 9th to 14th; lightning, no thunder or rain, 24th. Warmest winter in twelve years, except 1862-'63, and 1868-'69.
- Minneapolis, Minn.*—Mildest February since 1865.
- Oak Lake, Minn.*—Most beautiful February known here.
- Bowen's Prairie, Iowa.*—Severest gale this winter, 28th. Month warm.
- Guttenburg, Iowa.*—No sleighing all winter; fine season for cattle.
- Independence, Iowa.*—Winter very mild and even temperature.
- Boonesboro', Iowa.*—But two inches rain and melted snow from November 10th to 23d instant. February free from storms or rough winds, generally.
- Hematite, Mo.*—Martins 16th; frogs 20th; meadow larks 23d.
- Rolla, Mo.*—Month nearly 4° warmer than in 1870.
- Oregon, Mo.*—Auroras 12th, 13th, 16th, 20th, 24th, 27th.
- Atchison, Kans.*—Brilliant aurora 12th; heavy thunder-storm 23d.
- Plum Grove, Kans.*—Thunder, hail, 23d; frogs, blackbirds, 24th.
- Council Grove, Kans.*—First thunder-shower 16th, with hail 23d.
- Nebraska City, Neb.*—Latter part of month very pleasant.
- Newcastle, Neb.*—Little snow this winter, weather pleasant.
- Watsonville, Cal.*—Gale and thunder-storm 20th; willow in leaf 28th.
- Visalia, Cal.*—Winter colder than usual.
- Deer Lodge City, Mont.*—Auroras 11th, 12th, white light.
- Missoula, Mont.*—Bright auroras 11th, 12th, streamers.

MARCH, 1871.

Cornish, Me.—Robins and bluebirds 6th; ground bare 19th.

Oxford, Me.—Farmers plowing on 18th; this has not occurred in March since 1838.

Standish, Me.—Some have done part of their sowing on light high ground.

Gardiner, Me.—Auroras 1st, 10th, 15th, 19th, 22d, 24th, 28th. The month $2\frac{3}{4}^{\circ}$ warmer than ever known before.

Contocookville, N. H.—An unparalleled March; no good sleighing; only 6 inches of snow; bare ground nearly all the month; auroras 1st, 3d, 15th, 19th, 22d.

Panton, Vt.—Began plowing 14th; aurora 28th.

East Bethel, Vt.—Mean temperature of the month 5° higher than for five years preceding.

Georgetown, Mass.—Sleighing only on the morning of the 28th; auroras 1st, 2d, 19th, 24th.

New Bedford, Mass.—Bluebirds 1st; thunder 23d.

Lunenburg, Mass.—The mildest March since 1851.

Middletown, Conn.—The mean temperature higher than shown by the records of thirteen years.

Garrison's, N. Y.—Weather mild first part of the month; cold the latter part.

Cooperstown, N. Y.—The mildest March for twenty-two years; robins 4th.

North Hammond, N. Y.—Extraordinary season for maple sugar, trees averaging four to five pounds each.

North Depauville, N. Y.—The mildest March for thirty-five years; no sleighing; auroras 9th, 10th, 17th, 20th, 22d, 24th, 25th, 26th, 28th.

Buffalo, N. Y.—The temperature of the month $7\frac{3}{4}^{\circ}$ higher than the March average of thirteen years.

Greenwich, N. J.—Farmers plowing 2d.

Fallsington, Pa.—The warmest March since 1865.

Factoryville, Pa.—The temperature of the month was $7^{\circ}.5$ above the March mean of seven preceding years.

York Sulphur Springs, Pa.—Faint aurora 10th.

Woodlawn, Md.—The first part of the month was very mild; the latter part cold; aurora 24th.

Mt. St. Mary's, Md.—The temperature of March warmer than for several years past.

Surry Court-House, Va.—The month has been windy, very wet, and variable.

Albemarle, N. C.—Peach-tree bloom nearly over on the 26th, and apple and pear trees in full bloom.

Macon, Ga.—Oaks begin to bud 9th; terrific wind night of 11th; wind-storm 26th, throwing down trees, with much thunder and lightning.

Moulton, Ala.—An unusually damp and rainy March; the ground during most of the month too wet to plow or plant; the spring is unusually forward.

Pilatka, Fla.—Violent thunder-storm on the 30th, accompanied by hail.

Oakland, Tex.—Potatoes in bloom 15th; heavy thunder-shower from the west, night of 25th.

Brookhaven, Miss.—Heavy rain and hail-storm from the northwest, p. m. of 11th, lasting half an hour; heavy wind-storm passed at the northwest on the 26th, greatly damaging farms, &c.

Elizabethton, Tenn.—An unusually warm March; the season about a week earlier than usual.

Arcadia, Ky.—First bloom of strawberry 16th; aurora 17th, 9 p. m.

Cleveland, Ohio.—Auroras evenings of 15th and 17th.

North Fairfield, Ohio.—First thunder-shower 15th; the season quite two weeks earlier than usual.

North Bass Island, Ohio.—Heavy gale from west night previous to 1st; ice in Lake Erie broken up 1st; heavy thunder evenings of 2d and 14th; aurora 17th; very heavy white frost 18th and 25th.

Urbana, Ohio.—The month warmer than any March for twenty years past.

Bethel, Ohio.—The month has been very changeable, though not very cold; plowing done most of the month.

Algona, Mich.—Auroras 10th and 17th.

Ann Arbor, Mich.—An unusually pleasant March; navigation on the Detroit and St. Clair opened 19th.

Veray, Ind.—Brilliant aurora 17th.

Spiceland, Ind.—The finest March for many years.

Charleston, Ill.—Aurora 17th; the earliest spring for several years.

Belvidere, Ill.—The month unusually mild and even; good plowing since 8th; some grain sowed 13th.

Manitowoc, Wis.—Auroras 24th and 27th.

Milwaukee, Wis.—Ice left the Milwaukee River 9th.

Minneapolis, Minn.—Only one warmer March during the last six years; bluebirds 28th.

Koniska, Minn.—On the prairies the ground is frozen more than three feet deep, and plants usually considered hardy have been killed; very little snow until March.

Clinton, Iowa.—First boat up the river 9th; bluebirds and robins 10th.

Durant, Iowa.—Aurora 17th.

Independence, Iowa.—A very warm and pleasant March, and remarkable for the amount of thunder and lightning; farmers commenced sowing grain by the middle of the month.

Logan, Iowa.—No rain during the month; such a March has not been known here since 1850.

St. Louis, Mo.—On the 8th, 2.30 p. m., a destructive tornado swept over the river and a part of East St. Louis, its course being apparently from south to north, nearly. At its commencement the sky was as dark as night.

Hematite, Mo.—Heavy thunder-storm from the south on the 8th at 1.30 p. m.; aurora 17th.

Cave Spring, Mo.—A sudden change from warm to cold about 5 o'clock p. m. 8th; strawberry blossom April 1.

Leavenworth, Kansas.—The average temperature of the month $11^{\circ}.3$ higher than that of last March.

Paola, Kansas.—On the 8th a storm from the northwest, commencing with small hail and from that changing to a violent snow-storm, with heavy thunder and sharp lightning.

Williamstown, Kansas.—Blackbirds 1st; plowing 2d.

Bellevue, Neb.—Aurora 17th; a very pleasant and dry March.

Nebraska City, Neb.—Farmers generally began plowing and sowing about the 1st.

Denver, Col. Ter.—The month unusually windy and cloudy, and its mean temperature $13^{\circ}.3$ higher than that of last March; first rain 24th and 25th.

